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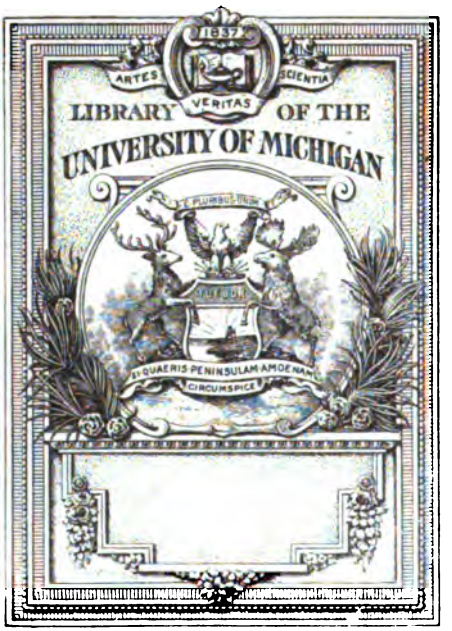
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# CATALOGUE

OF

# TUFTS COLLEGE.

## 1891-92.

# CATALOGUE

OF

# TUFTS COLLEGE.

1891-92.

CAMBRIDGE:
JOHN WILSON AND SON.
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1892.

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# Calendar.

## 1891.

| | |
|---|---|
| Sept. 17. | College Year begins, Thursday morning. |
| Oct. 25. | Russell Lecture, Sunday 4 P. M. |
| Nov. 1. | Limit of time for applying for Scholarships. |
| Dec. 23. | Christmas Recess begins, Wednesday Evening. |

## 1892.

| | |
|---|---|
| Jan. 6. | Christmas Recess ends, Wednesday Evening. |
| Jan. 30. | Limit of time for reporting Electives. |
| Feb. 6. | First term ends, Saturday. |
| May 31. | Prize Reading in the Divinity School. |
| June 7. | Prize Reading in the College of Letters. |
| June 10. | Class Day, Friday. |
| June 12. | Baccalaureate Sermon, Sunday 4 P. M. |
| June 15. | Commencement, Wednesday. |
| June 16. | Examination for Admission begins, Thursday 9 A. M. |

Summer Vacation, Fourteen Weeks.

| | |
|---|---|
| Sept. 20. | Second Examination for Admission, Tuesday 9 A. M. |
| Sept. 21. | Examination for Admission to Divinity School. |
| Sept. 22. | College Year begins, Thursday morning. |
| Sept. 24. | Limit of time for reporting Electives. |
| Sept. 25. | Russell Lecture, Sunday 4 P. M. |

---

Tufts College is situated at College Hill, four miles from Boston, on the Lowell division of the Boston and Maine Railroad. The Post Office Address is — Tufts College, Mass.

# Tufts College.

TUFTS COLLEGE owes its inception immediately to an effort, under the direction of the Rev. OTIS A. SKINNER of Boston, to raise one hundred thousand dollars for its foundation. About sixty thousand dollars was obtained in money; the subscription was completed by SYLVANUS PACKARD giving his bond for twenty thousand dollars, and by CHARLES TUFTS making a donation of twenty acres of land embracing the present site of the College. The latter announced his intention to increase his gift of land to more than one hundred acres, and thus became the largest benefactor at the start. It was determined, therefore, that the institution should receive his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, the same being the largest gift it has yet received from a single individual. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were OLIVER DEAN, who gave it ninety thousand dollars, and THOMAS A. GODDARD, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. WILLIAM J. WALKER came soon after with gifts and bequests amounting to nearly three hundred thousand dollars.

The charter under which, with slight changes, the College has been developed, was granted April 21, 1852. Students were first formally admitted in 1855. The first class, consisting of three members, was graduated in 1857. At the outset provision was made only for a course of study leading to the degree of Bachelor of Arts; but some unclassified students were in attendance constantly. It seemed desirable, therefore, to lay out courses for those who had been prepared only in English subjects. In 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course covering two years. This course continued until 1875, when it was

changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in a modern language, considerably less than its equivalent, was substituted. In the present catalogue a new course of study, leading to the degree of Bachelor of Arts, is offered for the first time, for which an entrance requirement, believed to be fully the equivalent of the Greek, is demanded in two modern languages. A department of Civil Engineering was also organized in 1869, and opportunity was offered for instruction in the branches pertaining to that subject. A course of study in Electrical Engineering was opened to students in 1883, and a professorship of the subject was established in 1890. The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. THOMAS J. SAWYER, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1883 the late PHINEAS T. BARNUM gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The first President was the Rev. HOSEA BALLOU 2d, D. D., who held office from the opening of the College until his death in 1861. His successor, the Rev. ALONZO AMES MINER, D. D., LL.D., was inaugurated in 1862, and continued in office until his resignation in February, 1875. The present incumbent was chosen in April of the same year.

# The College Charter.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-president, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age, or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the trustees to convene at such meetings, and also, from time to time to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the constitution and laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one-third, at least, of the trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed, and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College, in such manner as shall most effectually promote virtue and piety, and learning in such of the languages, and of the liberal and useful arts, and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government, that pecuniary aid shall hereafter be granted to the College.

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*Assistant in French and English.*

FRANK T. DANIELS, A.M.B.,
*Assistant in Drawing and Surveying.*

---

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*Lecturer on the History of Bible Lands.*

HENRY I. CUSHMAN, D.D.,
*Lecturer on Methods of Biblical Study.*

ARTHUR G. ROGERS, A.M.,
*Lecturer on the Work of the Ministry.*

GILBERT ROGERS, C.E.,
*Lecturer on Economics of Street Railways.*

HENRY C. BUCK, A.M.,
*Lecturer on Business Principles as applied in Mechanical and Electrical Engineering.*

FREDERICK S. PEARSON, A.M.M.,
*Lecturer on Central Power Stations.*

---

HELEN L. MELLEN,
*Librarian.*

WILLIS F. SEWALL, A.B.,
*Assistant in the Library.*

---

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S. THOMAS KIRK,
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FRANK P. GRAVES, A.M.

FRANK E. SANBORN, S.B.

## Candidates for the Degree of Master of Arts.

BATEMAN, FRANK ELLIOTT, '87 . . . . . *Boston.*
(*History and Natural History.*)

HATHAWAY, CHARLES AUGUSTUS, '90 . . . . . *Stamford, Conn.*
(*Geology and Latin.*)

MCCOLLESTER, LEE SULLIVAN, '81 . . . . . *Detroit, Mich.*
(*English Literature and Church History.*)

NEWTON, ELBRIDGE WARD, '90 . . . . . *New Market, N. H.*
(*English Literature and History.*)

PROUTY, WILLIS JAMES, '87 . . . . . *Meriden, Conn.*
(*Latin and Mathematics.*)

STONE, HENRY BEECHER, '86 . . . . . *Deering, Me.*
(*Natural History and Physics.*)

TOWLE, GEORGE GILMAN, '91 . . . . . *Dover, N. H.*
(*Greek and Latin.*)

TUTTLE, HIRAM AUSTIN, '91 . . . . . *Barre, Vt.*
(*Classical Philology.*)

# Undergraduates.

## CLASSICAL AND PHILOSOPHICAL COURSES.

### Senior Class.

| | | |
|---|---|---|
| Arnold, George Allen | *Braintree* | East Hall, 18. |
| Brooks, Maro Spaulding | *Hancock, N. H.* | East Hall, 18. |
| Carter, Horace Choate | *Springfield,* | West Hall, 16. |
| Cobb, Joseph Fernald | *Deering, Me.* | Mid. Hall, 9. |
| Gray, William Southwick | *West Somerville* | West Hall, 1. |
| Johnson, Melvin Maynard | *Waltham* | Dean Hall, 10. |
| Kimball, Fred Elbert | *Burlington, Vt.* | West Hall, 9. |
| Libby, Wentworth Roscoe | *Blue Island, Ill.* | Blue Island, Ill. |
| Lyon, Fred Dow | *Poland, Me.* | Dean Hall, 13. |
| Marggraf, Edward Everett | *Caledonia, O.* | Mid. Hall, 6. |
| North, Frank Allen | *Boston* | Dean Hall, 10. |
| Perry, Henry Joseph | *Fort Plain, N. Y.* | West Hall, 1. |
| Peterson, Arthur Everett | *Monson* | West Hall, 1. |
| Putnam, Bertrand Flavel | *New Salem* | Dean Hall, 2. |
| Randall, Arthur Gile | *North Attleboro* | Dean Hall, 13. |
| Williams, Loring George | *Nottingham, N. H.* | Dean Hall, 14. |
| Willis, Charles Austin | *Waltham* | Dean Hall, 5. |
| Willis, Dwight Fletcher | *Waltham* | Dean Hall, 5. |

### Junior Class.

| | | |
|---|---|---|
| Arnold, Louis Wales | *Braintree* | East Hall, 18. |
| DeGoosh, Arthur Winfield | *Bradford, Vt.* | Dean Hall, 6. |
| Groce, Joseph Byron | *Roxbury* | Dean Hall, 12. |
| Kipp, Charles Goodhue | *New York, N. Y.* | 54 Curtis St. |
| Martin, Willard Shepard | *Plainfield, Vt.* | Dean Hall, 6. |
| Spaulding, Harris Waldemar | *Haverhill* | Dean Hall, 11. |
| Thompson, Alfred Percival | *Middleboro* | West Hall, 7. |
| Watson, Frederick Cushman | *Auburn, Me.* | 102 Curtis St. |

### Sophomore Class.

| | | |
|---|---|---|
| Benton, Herbert Elmon | *Annisquam* | West Hall, 11. |
| Eastwood, James Stewart | *West Brattleboro, Vt.* | East Hall, 31. |
| Flynn, John William | *Rockland* | East Hall, 30. |

| | | |
|---|---|---|
| Goodrich, William Henry | *Fitchburg* | Dean Hall, 3. |
| Hicks, Blanchard Fossett | *Rockland, Me.* | West Hall, 14. |
| Hodgdon, Fred Crosby | *Waltham* | East Hall, 16. |
| Leighton, Virgil Louis | *West Falmouth, Me.* | West Hall, 11. |
| Small, Willard Stanton | *Provincetown* | West Hall, 4. |
| Snow, Charles Joseph | *Haverhill* | Dean Hall, 11. |
| Stroud, Charles Crawford | *Grosvenordale* | East Hall, 23. |
| Wade, Charles St. Clair | *West Somerville* | East Hall, 16. |
| Walker, Fred Storer | *Westbrook, Me.* | East Hall, 31. |
| Webster, Fred Henry | *Haverhill* | West Hall, 3. |
| Whittemore, Thomas | *Cambridge* | Dean Hall, 12. |
| Wren, Frank George | *Roslindale* | East Hall, 30. |

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| | | |
|---|---|---|
| Flynn, William Andrew | *Rockland* | East Hall, 30. |
| Lambert, Fred Dayton | *Muscatine, Ia.* | 154 Boston Ave. |

**Freshman Class.**

| | | |
|---|---|---|
| Averell, Eugene | *Lynn* | Dean Hall, 1. |
| Barney, Charles Neal | *Lynn* | East Hall, 25. |
| Chessmore, Frank Harding | *Jonesville, Vt.* | West Hall, 12. |
| Clark, Charles Dow | *St. Albans, Vt.* | East Hall, 9. |
| Clarke, Edward Perkins | *Mystic, Conn.* | 80 Professors Row. |
| Craig, Edward Channing | *Franklin* | West Hall, 11. |
| Darling, Charles Poché | *Roxbury* | East Hall, 26. |
| Dunham, William Roger | *Barre, Vt.* | West Hall, 12. |
| Eaton, Clarence Livingstone | *Weymouth* | West Hall, 2. |
| Emery, William Gordon | *Bridgeport, Conn.* | East Hall, 10. |
| Fobes, Harold Bartlett | *Portland, Me.* | West Hall, 6. |
| Folsom, Harry Charles | *Oakland, Me.* | West Hall, 6. |
| Frank, Henry Pennell, | *Portland, Me.* | Dean Hall, 9. |
| George, Bert Dutton | *East Calais, Vt.* | West Hall, 13. |
| Godfrey, William Hollis | *Lynn* | Dean Hall, 1. |
| Ireland, George Preston | *Springfield* | West Hall, 16. |
| King, Charles Guy | *Mattapan* | East Hall, 28. |
| Larrabee, Frank Philip | *Portland, Me.* | East Hall, 11. |
| Lynde, Frank Martin | *Williamstown, Vt.* | West Hall, 13. |
| Nason, David White | *Bangor, Me.* | East Hall, 8. |
| Ricketts, Charles Lucius | *Monson* | East Hall, 26. |
| Saunders, Joseph Henry | *Everett* | West Hall, 14. |
| Sheldon, James Fitts | *Haverhill* | 102 Curtis St. |

| | | |
|---|---|---|
| Small, William Morton | *Baldwinville* | West Hall, 12. |
| Smith, Robert Baxter | *No. Tunbridge, Vt.* | Mid. Hall, 7. |
| Thompson, Fred Everett | *Bangor, Me.* | East Hall, 8. |
| Whitehorne, William Risby | *W. Somerville* | Mid. Hall, 9. |

## ENGINEERING COURSES.

### Third Year.

| | | |
|---|---|---|
| Curtiss, Wooster Blake | *Medford* | East Hall, 13. |
| Doane, Francis Hathaway | *Newtonville* | West Hall, 10. |
| Dolbear, Clinton Emerson | *College Hill* | 134 Professors Row. |
| Edmands, Isaac Russell | *Providence, R. I.* | East Hall, 19. |
| Edson, Howard Lincoln | *Braintree* | Dean Hall, 14. |
| Hardwick, Joseph | *Lempster, N. H.* | Mid. Hall, 10. |
| Hollister, John Murray | *Plainfield, Vt.* | West Hall, 9. |
| Hosford, Frederick William | *Medford* | Mid. Hall, 10. |
| Hunt, Edward Jarvis | *Bangor, Me.* | Dean Hall, 4. |
| Kennedy, Alfred Warren | *South Medford* | Mid. Hall, 11. |
| Swain, Henry Sumner | *Boston* | East Hall, 19. |
| Thayer, Albert Oliver | *West Somerville* | 205 Holland St. |
| Wilson, Louis Melvin | *Rowe* | Mid. Hall, 11. |
| Wing, Frank Augustus | *West Somerville* | Mid. Hall, 5. |

### Second Year.

| | | |
|---|---|---|
| Aldrich, Frank Lawson | *Thompson, Conn.* | East Hall, 23. |
| Bates, George Moulton | *Waltham* | Dean Hall, 3. |
| Chase, Harry Gray | *West Newbury* | Dean Hall, 2. |
| Cushman, Ara, Jr. | *Auburn, Me.* | Dean Hall, 7. |
| Gow, Charles Rice | *Medford* | East Hall, 22. |
| Johnston, Chesley Metcalf | *Bangor, Me.* | East Hall, 6. |
| Lane, Arthur Kempton | *Boston* | Dean Hall, 8. |
| Neal, John Alden | *Wiscasset, Me.* | West Hall, 2. |
| Peakes, Henry Allen | *Moore's Mills, N. B.* | East Hall, 6. |
| Robinson, Harry Orman | *Bangor, Me.* | East Hall, 22. |
| Russ, Wilfred Wesley | *Haverhill* | Dean Hall, 7. |
| Shaw, Stillman | *Woburn* | West Hall, 7. |
| Smith, Phil Sheridan | *No. Tunbridge, Vt.* | Mid. Hall, 7. |
| Strong, George Edward | *Gloucester* | East Hall, 6. |
| Weston, Howard Hanchett | *Somerville* | East Hall, 16. |

### First Year.

| | | |
|---|---|---|
| Byrne, Edward Patrick | *Medford* | 15 Stearns Ave. |
| Clement, Sumner | *Newton Centre* | West Hall, 10. |
| Cropley, Eugene Irving | *Marblehead* | Dean Hall, 8. |
| Dresser, Walter Prescott | *Fitchburg* | West Hall, 3. |
| Foss, Hubert Collamore | *Bangor, Me.* | East Hall, 8. |
| George, Arthur Lincoln | *Lebanon, N. H.* | Dean Hall, 9. |
| Hathaway, Carl Voltaire | *South Cabot, Vt.* | West Hall, 14. |
| Hersey, Isaac Burrill | *Hingham* | East Hall, 15. |
| Homer, George Gray | *Arlington* | West Hall, 7. |
| Lawton, Frank Edson | *Mt. Vernon, N. Y.* | East Hall, 15. |
| Livermore, Harry Brigham | *Brighton* | Mid. Hall, 12. |
| McDavitt, John Olin | *Lawrence* | East Hall, 14. |
| McKenzie, Archibald | *Woodstock, Vt.* | West Hall, 8. |
| Morrison, Adelbert Harland | *Lawrence* | East Hall, 14. |
| Morse, Robert Henry | *Norwood* | West Hall, 8. |
| Pember, Frederick Howard | *Peabody* | East Hall, 9. |
| Read, Rufus Curtis | *Attleborough* | East Hall, 10. |
| Spalding, Samuel Albert | *Danvers* | West Hall, 4. |
| Walkley, James Arthur | *Brighton* | Mid. Hall, 12. |
| Ward, George Allen | *Barre, Vt.* | West Hall, 13. |
| Whitney, Orville Jophanus | *Medford* | East Hall, 13. |
| Wills, Albert Potter | *Waltham* | East Hall, 27. |

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| | | |
|---|---|---|
| Brothers, George Arthur | *Lowell* | East Hall, 5. |
| Curtis, George Carroll | *Brooklyn, N. Y.* | East Hall, 11. |
| Mallett, John Purington | *Topsham, Me.* | East Hall, 28. |
| Page, Charles Harrison | *Lowell* | East Hall, 5. |
| Perkins, Sprague Hamilton | *Roxbury* | 58 St. James St., Roxbury. |
| Wright, Edward Hanscom | *Charlestown* | East Hall, 5. |

### SPECIAL STUDENTS.

| | | |
|---|---|---|
| Hawkins, Walter Stanley | *Stoneham* | Dean Hall, 4. |
| Rogers, Louis Albert | *Salem* | West Hall, 8. |
| Todd, William Robert | *Lynn* | Mid. Hall, 6. |

# Summary.

| | | |
|---|---|---|
| CLASSICAL AND PHILOSOPHICAL COURSES. | | |
| Graduates | | 8 |
| Seniors | 18 | |
| Juniors | 8 | |
| Sophomores | 17 | |
| Freshmen | 27 | |
| | | — 70 |
| ENGINEERING COURSES. | | |
| Third Year | 14 | |
| Second Year | 16 | |
| First Year | 27 | |
| | | — 57 |
| Special Students | | 3 |
| Total in College of Letters | | 138 |
| Divinity School | | 38 |
| | | 176 |

# Requirements for Admission.

Candidates for admission to the Freshman Class will be examined upon the following studies: —

## CLASSICAL COURSES.

1. Latin Grammar. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. Cæsar. — Gallic War, Books I–IV.

3. Cicero. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. Virgil. — Aeneid, Books I–VI.

5. Ovid. — Metamorphoses, 2500 lines.

6. Latin Composition. — Harkness's Latin Composition to Part III., and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

Alternatives. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

7. Greek Grammar. — Hadley's, Crosby's, Curtius's or Goodwin's Greek Grammar, including Prosody.

8. Xenophon. — Anabasis, four books.

9. Homer. — Iliad, three books.

10 Greek Composition. — The translation of simple English prose into Greek.

Alternatives. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less used words).

In place of the requirements in Greek (7, 8, 9, and 10), the following requirements in Advanced German *or* French may be substituted: —

Advanced German: —

(1.) Proficiency in more advanced grammar. In addition to a thorough knowledge of accidence (including the elements of word-formation), and of the principal values of prepositions and conjunctions, the candidate must be familiar with the essentials of German syntax, — particularly that of the modal auxiliaries and the subjunctive and infinitive modes.

(2.) Ability to translate ordinary German, to be acquired by the reading, in addition to the elementary requirement, of the following works: *Der Fluch der Schönheit* (Riehl); *Aus dem Staat Friedrichs des Grossen* (Freytag); *Die Harzreise* (Heine); the first three books of *Dichtung und Wahrheit* (Göthe); *Minna von Barnhelm* (Lessing); *Wilhelm Tell* and *Das Lied von der Glocke* (Schiller); and thirty pages of lyrics or ballads.

(3.) Ability to write in German a paragraph upon an assigned subject, chosen from the works specified in the preceding section.

[While it is assumed that examiners would avoid setting as subjects for composition matters of very subordinate interest or of minor detail, it is hoped that teachers may be led by this requirement to stimulate from the beginning the pupil's interest in the subject matter of the works read in preparation.]

ADVANCED FRENCH: —

(1.) Proficiency in more advanced grammar. In addition to a knowledge of the accidence, and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, — especially the use of modes and tenses, — and with the more frequently recurring idiomatic phrases.

(2.) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including *Le siège de Berlin* and *La dernière classe* (Daudet); *Colomba* (Mérimée); *Mademoiselle de la Seiglière*, the play (Sandeau); *Jeanne Darc* (Henri Martin); and one play each of Corneille, Racine, and Molière.

(3.) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German, § 3.]

Those presenting Elementary French must present Advanced German, and *vice versa*.

All candidates will also be examined in Elementary German *or* French: —

11 *a*. ELEMENTARY GERMAN: —

(1.) Proficiency in elementary grammar; implying, especially, familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak, and of the more usual strong verbs; the more common prepositions; the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.

(2.) Ability to translate a passage of simple prose at sight, — a vocabulary of the less used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose, with a few lyric poems.]

(3.) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.

11 *b*. ELEMENTARY FRENCH : —

(1.) Proficiency in elementary grammar, — implying, especially, familiarity with the following topics : inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives;" the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular, and the more usual irregular verbs, — such as *dire, faire,* and the classes represented by *ouvrir, sentir, venir, paraître, conduire,* and *craindre.*

[See note under Elementary German, § 1.]

(2.) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(3.) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German, § 3.]

12. ARITHMETIC — including the Metric System.

13. ALGEBRA — through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

14. PLANE GEOMETRY.

15. ANCIENT GEOGRAPHY AND HISTORY. — Outlines of ancient geography; Smith's Smaller History of Greece, to the death of Alexander; Allen's History of Rome.

16. ENGLISH GRAMMAR AND COMPOSITION. — Spelling, punctuation, structure of sentences; correct use of words; clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subject for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read,

and, from two or three of them, subjects will be assigned at the time of examination.

For 1892. — Shakspeare's Julius Cæsar and As You Like It; Scott's Marmion; Longfellow's Courtship of Miles Standish; The Sir Roger de Coverley Papers in the *Spectator;* Macaulay's second Essay on the Earl of Chatham; Webster's first Bunker Hill Oration; Irving's Alhambra; Scott's Talisman; George Eliot's Scenes from Clerical Life; Hawthorne's House of the Seven Gables.

For 1893. — Shakspeare's Julius Cæsar and Twelfth Night; Scott's Marmion; Longfellow's Courtship of Miles Standish; The Sir Roger de Coverley Papers in the *Spectator;* Macaulay's second Essay on the Earl of Chatham; Emerson's American Scholar; Irving's Sketch Book; Scott's Ivanhoe.

For 1894. — Shakspeare's Julius Cæsar and Merchant of Venice; Scott's Lady of the Lake; Arnold's Sohrab and Rustum; The Sir Roger de Coverley Papers in the Spectator; Macaulay's second Essay on the Earl of Chatham; Emerson's American Scholar; Irving's Sketch Book; Scott's Abbot; Dickens's David Copperfield.

## PHILOSOPHICAL COURSE.

For admission to the Philosophical Course, German or French is substituted for Greek. The candidate must give evidence of a thorough knowledge of the accidence and more important principles of the syntax of the language presented, and be able to render simple English sentences into the same, and must have translated the equivalent of four hundred pages of German or six hundred of French, including two classic dramas. The Joynes-Meissner German Grammar, and Edgren's French Grammar represent the amount of text-book work in grammar and composition required for preparation in these languages.

## ENGINEERING COURSES.

Candidates for the Engineering Courses will be examined in the following studies: —

1. Arithmetic. (See Requirement 12, page 23.)
2. Algebra. (See Requirement 13, page 23.)
3. Plane Geometry.
4. Solid Geometry.
5. German or French.
6. English Grammar and Composition. (See Requirement 16, page 23.)

The regular examination for admission will begin on the day after Commencement, and continue through the following day. A second examination will also be held on the Tuesday and Wednesday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days.

At the regular examination in June, those who will be candidates for admission to the Freshman Class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared on not less than nine of the sixteen subjects enumerated on the preceding pages, and may receive certificates if they pass on not less than seven. English may be presented at the final examination only.

For admission to an advanced class, an examination must be well sustained both in the preparatory studies and in the studies through which such class has passed. To be admitted to advanced standing, one must also pay half the tuition of the previous portion of the course, unless he comes from another college; provided, that if he be admitted at the beginning of the Senior year the tuition of the Junior year shall be the only arrears required of him.

While under certain conditions the certificates of teachers in good standing are accepted in lieu of an examination, this method of admission is regarded with disfavor. Candidates so admitted will be considered as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate. To be received, the certificate (blank forms of which will be sent on application to the Secretary of the Faculty) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course.

# Courses of Study.[1]

## CLASSICAL COURSES.

Two courses of study lead to the degree of Bachelor of Arts.

COURSE I., for candidates who enter with Greek, corresponds to that which is usually offered by the New England colleges.

COURSE II., offered in 1892–93 for the first time, has been arranged especially to meet the needs of graduates from the best English high schools, and will receive those who present, instead of the preparatory Greek, an advanced and equivalent course in either French or German, in addition to the elementary knowledge of the alternate modern language. (See pages 21, 22.)

Course II. may be made, as regards language, either modern or ancient according as the student prefers to continue his maximum language, — which he may do for three years, — or to begin the study of elementary Greek with the prospect of covering by the end of the Junior year both the Greek of the preparatory school and that required in Course I. In Course II. the alternate modern language is a required study for two years, and may be elected through the entire course.

Elective privileges in both courses begin at the middle of the Sophomore year. Excepting in Greek, French, and German, the required work of the two courses is identical.

## COURSE I.

### FRESHMAN CLASS.

#### First Term.

**Latin 1.** — Livy; Cicero, De Senectute; Latin Composition; Roman History and Antiquities, with Illustrated Lectures. *Five hours a week.*

PROFESSOR DEARBORN.

**Greek 1.** — Xenophon, Memorabilia or Cyropaedia; Herodotus, Book VI.; Lectures on Attic and Ionic Dialects, and on Grecian History; Greek Prose Composition, Allinson. *Four hours a week.*

MR. GRAVES.

Optional Reading in the Iliad. *Two hours a week.* MR. GRAVES.

[1] The following courses of study do not go into effect until 1892–93.

**French 1** (if entering with French). — Edgren's Grammar; Super's French Reader. *Four hours a week.* —— ——

**German 1** (if entering with German). — Joynes-Meissner Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

**Mathematics 1.** — Taylor's College Algebra; Byerly's Chauvenet's Solid and Spherical Geometry. *Four hours a week.* PROFESSOR BROWN.

**English 1.** — English Composition. *One hour a week.*
PROFESSOR SHIPMAN.

### Second Term.

**Latin 1.** — Cicero, De Senectute, continued; Horace, Satires and Epistles; Latin Composition; Roman History and Antiquities; Lectures on the History of the Latin Language and Literature. *Five hours a week.* PROFESSOR DEARBORN.

**Greek 1.** — Thucydides, parts of Books VI. and VII.; Homer, Odyssey (Phœacian Episode); Lectures on Old Attic and Epic Dialects; Greek Prose Composition in the style of Xenophon. *Four hours a week.*
MR. GRAVES.

Optional reading in the Iliad. *One hour a week.* MR. GRAVES.

**French 1** (if entering with French). — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* —— ——

**German 1** (if entering with German). — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.* PROFESSOR FAY.

**Mathematics 1.** — Byerly's Chauvenet's Solid and Spherical Geometry, continued; Wentworth's Trigonometry. *Four hours a week.*
PROFESSOR BROWN.

**English 1.** — English Composition. *One hour a week.*
PROFESSOR SHIPMAN.

## SOPHOMORE CLASS.

### First Term.

**Latin 2.** — Horace, Odes and Epodes; Cicero, De Amicitia; Latin Composition. *Three hours a week.* PROFESSOR DEARBORN.

**Greek 2.** — Ten Attic Orators, with Jebb's Attic Orators as Commentary; Goodwin's Greek Moods and Tenses; Lectures on Attic Law and Greek Life. *Three hours a week.* MR. GRAVES.

Optional reading in Euripides. *One hour a week.* MR. GRAVES.

**German 1** (if entering with French). — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

**French 1** (if entering with German). — Edgren's Grammar; Super's French Reader. *Four hours a week.* —— ——

**English 2.** — Rhetoric, Genung's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

**Mathematics 2.** — Spherical Trigonometry; Applications of Trigonometry; Hardy's Analytic Geometry. *Four hours a week.* PROFESSOR BROWN.

**Oratory 1.** — Practice in Reading Standard Selections; Vocal Exercises. *One hour a week.* PROFESSOR MAULSBY.

**Second Term.**

**Latin 2.** — Terence, Adelphi; Tacitus, Annals. *Four hours a week.* PROFESSOR DEARBORN.

**Greek 2.** — The Dramatists; Study of Rhythm and Metre; Lectures on Development of the Drama, the Greek Theatre, and the Dramatists. *Three hours a week.* MR. GRAVES.

Optional reading in Plato. *Two hours a week.* MR. GRAVES.

**Physics 1.** — Mechanics, Daniell's Principles. *Three hours a week.* PROFESSOR HOOPER.

**Oratory 1.** — Practice in Reading, continued; Gestures, with Class Exercises; Individual Preparation of Special Selections. *One hour a week.* PROFESSOR MAULSBY.

ELECTIVE. — Six hours a week from the following elective studies (see page 34): — English 4, 6; French 1 (German 1) continued (see page 35); Mathematics 3, 6; Engineering 1; Natural History 1. (For regulations regarding choice of electives, see page 67.)

## JUNIOR CLASS.

**First Term.**

**Physics 2.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry 1.** — Inorganic Chemistry, with Recitations, Lectures and Laboratory Work. *Four hours a week.* PROFESSOR COMEY and MR. DURKEE

**English 3.** — Themes. PROFESSOR SHIPMAN.

ELECTIVE. — Nine hours a week in the following elective studies: Latin 3; Greek 3; English 7, 11; French 2; German 2; Mathematics 4; Engineering 3, 4; Physics 3; Natural History 2; Oratory 2.

### Second Term.

**Physics 2.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Philosophy 1.** — Psychology, Hill's; Sully's. *Four hours a week.* PROFESSOR SHIPMAN

**English 3.** — Themes. PROFESSOR SHIPMAN.

ELECTIVE. — Nine hours a week from the following elective studies: Latin 3; Greek 3; English 8; German 2; French 2; Mathematics 4; Engineering 2, 3, 4; Physics 3; Chemistry 2; Natural History 3; Oratory 2.

## SENIOR CLASS.

### First Term.

**Philosophy 2.** — Ethics; Calderwood's Moral Science, with references to Kant's Metaphysic of Ethics and Ueberweg's History of Philosophy. *Four hours a week.* PRESIDENT CAPEN.

**Philosophy 3.** — Logic, Jevons's; Davis's. *Three hours a week.* PROFESSOR SHIPMAN.

ELECTIVE. — Nine hours a week from the following elective studies: Latin 4; Greek 4; Hebrew; English 5, 9; German 3; French 3; Italian; Philosophy 4; Jurisprudence; Mathematics 5; Engineering 5; Physics 4, 5, 6; Astronomy; Chemistry 3, 4; Natural History 4; Oratory 2.

### Second Term.

**Political Economy.** — Marshall's; Fawcett's; Lectures. *Four hours a week.* PRESIDENT CAPEN.

ELECTIVE. — Nine hours a week from the following elective studies: Hebrew; Latin 4; Greek 4; English 5, 10; German 3; French 3; Italian; Philosophy 5; Jurisprudence; Mathematics 5; Engineering 5; Physics 4, 5, 7; Chemistry 4, 5, 6; Natural History 5, 6, 7; Oratory 2.

## COURSE II.

Two alternative courses are offered according as Advanced German (Course A), or French (Course B), has been presented for admission.

### COURSE A.

#### FRESHMAN CLASS.

##### First Term.

**Latin 1, Mathematics 1,** and **English 1.** — As in Course I. (See page 26.) *Ten hours a week.*

**French 1.** — Edgren's Grammar; Super's French Reader. *Four hours a week.*

OPTION. — **Elementary Greek.** — Goodwin's Greek Grammar; White's First Lessons in Greek; Xenophon, Anabasis (Goodwin). *Five hours a week.* MR. GRAVES.

or,

**German 3.** Schiller, Maria Stuart (with Düntzer's Erläuterungen) Geschichte des Abfalls der Niederlande (selections); Göthe, Egmont. *Three hours a week.* PROFESSOR FAY.

##### Second Term.

**Latin 1, Mathematics 1,** and **English 1.** — As in Course I. (See page 27.) *Ten hours a week.*

**French 1.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Four hours a week.*

OPTION. — **Elementary Greek.** — Xenophon, Anabasis; Homer, Iliad (Seymour); Greek Prose Composition (Jones). *Five hours a week.* MR. GRAVES.

or,

**German 3.** — Müller's Geschichte §§ 374–419 (The Thirty-Years' War); Schiller, Wallenstein; Balladen und Romanzen (Buchheim's collection); two essays in German. *Three hours a week.* PROFESSOR FAY.

## SOPHOMORE CLASS.

### First Term.

**Latin 2, Mathematics 2, English 2,** and **Oratory 1.** — As in Course I. (See pages 27, 28.) *Eleven hours a week.*

**French 2.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.*

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OPTION. — **Greek 1.** — Xenophon, Memorabilia or Cyropaedia; Herodotus, Book VI.; Lectures on Attic and Ionic Dialects and on Grecian History; Greek Prose Composition, Allinson. *Four hours a week.*

MR. GRAVES.

**or,**

**German 4.** — Lessing, Prosa, Nathan der Weise; Göthe, Tasso; Dünzer, Erläuterungen zu Nathan, zu Tasso; two essays in German. *Three hours a week.* PROFESSOR FAY.

### Second Term.

**Latin 2, Physics 1,** and **Oratory 1.** — As in Course I. (See page 28.) *Eight hours a week.*

**French 2.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.*

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ELECTIVE. — Six hours a week (seven, if Greek 1 is elected) from the following elective studies: Greek 1; English 4, 6; German 4 (continued); Mathematics 3, 6; Natural History 1.

## JUNIOR CLASS.

PRESCRIBED STUDIES. — As in Course I. (See page 28.)

ELECTIVES. — In addition to the Junior electives for Course I., Greek 2, French 3, and German 5 are open.

## SENIOR CLASS.

PRESCRIBED STUDIES. — As in Course I. (See page 29).

ELECTIVES. — In addition to the Senior electives for Course I., Greek 3, and French 4 are open.

## COURSE B.

As in Course A, substituting for each course in French the course in German of the same number, and *vice versa*. (See pages 35, 36.)

## PHILOSOPHICAL COURSE.

This course of study, leading to the degree of Bachelor of Philosophy, coincides with the foregoing in the Junior and Senior years, and varies from them in the first two years, according as German (Course A), or French (Course B), has been presented for admission, as follows: —

### COURSE A.

#### FRESHMAN CLASS.

##### First Term.

**Latin 1, Mathematics 1,** and **English 1.** — As in the Classical Course. (See page 26.) *Ten hours a week.*

**French 1.** — Edgren's Grammar; Super's French Reader. *Four hours a week.*

**German 2.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hours a week.*

##### Second Term.

**Latin 1, Mathematics 1,** and **English 1.** — As in the Classical Course. (See page 27.) *Ten hours a week.*

**French 1.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Four hours a week.*

**German 2.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Göthe, Hermann und Dorothea; one essay in German. *Three hours a week.*

#### SOPHOMORE CLASS.

##### First Term.

**Latin 2, English 2, Mathematics 2,** and **Oratory 1.** — As in the Classical Course. (See pages 27, 28.) *Eleven hours a week.*

**French 2.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.*

**German 3.** — Schiller, Maria Stuart (with Düzner's Erläuterungen); Geschichte des Abfalls der Niederlande (selections); Göthe, Egmont. *Three hours a week.* PROFESSOR FAY.

### Second Term.

**Latin 2, Physics 1,** and **Oratory 1.** — As in the Classical Course. (See page 28.) *Eight hours a week.*

**French 2.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.*

ELECTIVE. — Six hours a week from the following elective studies: English 4, 6; German 3, continued; Mathematics 3, 6; Natural History 1.

## JUNIOR CLASS.

PRESCRIBED STUDIES. — As in the Classical Course. (See page 28).

ELECTIVES. — In addition to the regular Junior electives for the Classical Course I., Elementary Greek, counting as three hours (see pages 30, 31); French 3, and German 4 are open.

## SENIOR CLASS.

PRESCRIBED STUDIES. — As in the Classical Course. (See page 29.)

ELECTIVES. — In addition to the Senior electives for the Classical Course I., Greek 1 (counting as three hours), French 4, and German 5 are open.

## COURSE B.

As in Course A, substituting for each course in French the course in German of the same number, and *vice versa*. (See pages 35, 36.)

## ELECTIVE STUDIES.

For regulations regarding elective studies, see page 67.

**Hebrew.** — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism; History of Hebrew Religion. *Three hours a week for the year.* DR. CURTIS.

**Latin 3.** — Juvenal; Cicero, De Officiis. *Three hours a week for the year.* PROFESSOR DEARBORN.

**4.** — Pliny, Letters; Terence; Lucretius. *Three hours a week for the year.* PROFESSOR DEARBORN.

**Greek 1.** — Xenophon, Memorabilia or Cyropædia; Herodotus, Book VI.; Thucydides, parts of Books VI. and VII.; Homer, Odyssey (Phœacian Episode); Lectures on Attic, Ionic, and Epic Dialects, and on Grecian History; Greek Prose Composition. *Four hours a week for the year.* MR. GRAVES.

**2.** — Ten Attic Orators, Jebb's Attic Orators as Commentary; The Dramatists; Lectures on Attic Law, Greek Life, The Development of the Drama, and on the Greek Theatre and Dramatists; Goodwin's Greek Moods and Tenses; Study of Rhythm and Metre. *Three hours a week for the year.* MR. GRAVES.

**3.** — Plato, Symposium; Sight-Reading in the Odyssey, Tyler's Lyrics, Orations of Lysias. *Three hours a week for the year.* PROFESSOR SCHNEIDER.

**4.** — Aristotle, Ethics; Theocritus, Idylls. *Three hours a week for the year.* PROFESSOR SCHNEIDER.

**English 4.** — English Composition (advanced course). *Three hours a week for the second term.* PROFESSOR SHIPMAN.

**5.** — English Composition. *Three hours a week for the year.*

(Course 5 may be taken as an extra elective only.)

PROFESSOR SHIPMAN.

**6.** — English Literature. Chaucer, Bacon, Shakspeare. *Three hours a week for the second term.* PROFESSOR MAULSBY.

**7.** — English Literature. Milton to Cowper, with selected authors; as, Dryden, Pope, Addison, Gray, Goldsmith. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**8.** — English Literature. 1800 to 1840; selected authors; as, Shelley, Keats, Wordsworth, Lamb, Irving, Poe. *Three hours a week for the second term.* PROFESSOR MAULSBY.

**9.** — English Literature. 1840 to the present; selected authors; as, Carlyle, Ruskin, Tennyson, Browning, Emerson, Lowell. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**10.** — English Literature. Study of a Special Topic. (See page 51.) *Three hours a week for the second term.* PROFESSOR MAULSBY.

**11.** — English Philology. — History of the English Language. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**German 1.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Four hours a week for the first term, three for the second term.* PROFESSOR FAY.

**2.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Göthe, Hermann und Dorothea; Grammar and Composition; one essay in German. *Three hours a week for the year.*

**3.** — Schiller, Maria Stuart (with Dünzer's Erläuterungen), Geschichte des Abfalls der Niederlande (selections); Göthe, Egmont; Müller's Geschichte, §§ 374–419 (The Thirty-Years' War); Schiller, Wallenstein; Balladen und Romanzen (Buchheim's collection); two essays in German. *Three hours a week for the year.* PROFESSOR FAY.

**4.** — Lessing, Prosa, Nathan der Weise; Göthe, Tasso, Faust; Dünzer, Erläuterungen zu Nathan, zu Tasso, zu Faust; two essays in German. *Three hours a week for the year.* PROFESSOR FAY.

**5.** — Vilmar, Geschichte der deutschen Literatur, with illustrative texts for principal epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. Thesis for honor men. *Three hours a week for the year.* PROFESSOR FAY.
(Course 5 will not be given in 1892–93.)

**French 1.** — Edgren's Grammar; Super's French Reader. Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Four hours a week for the first term, three hours a week for the second term.*

**2.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. Molière, L'Avare; Corneille, Poly-

euete; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week for the year.*

**3.** — Literature of the 17th century: Racine, Andromaque, Mithridate, Phèdre; Molière, Le Bourgeois Gentilhomme, Le Misanthrope, Le Tartuffe. La Société Française au XVII^e^ Siècle (Crane); Molière, Les Précieuses Ridicules, Les Femmes Savantes; Madame de Sévigné, Lettres Choisies; one essay in French. (Ploetz's Nouvelle Grammaire Française will be used for reference in Course 3, and the German exercises of his Cours Gradué de Thèmes will be translated into French.) *Three hours a week for the year.* PROFESSOR FAY.

**4.** — Literature of the 19th century: Le Romantisme Français (Crane); Hugo, Hernani, Ruy Blas, L'Année Terrible; Lamartine, Jocelyn; George Sand, Indiana; De Musset, Confessions d'un Enfant du Siècle; De Vigny, Cinq-Mars; Taine, La Fontaine et ses Fables; Cherbuliez, Méta Holdenis; two essays in French. *Three hours a week for the year.*

**5.** — Demogeot, Littérature de la Langue Française, with illustrative texts for 16th and 18th centuries; two essays in French. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. Thesis for honor men. *Three hours a week for the year.* PROFESSOR FAY.

(Course 5 will not be given in 1892-93.)

**Italian.** — Grandgent's Grammar and Composition; De Amicis, Spagna. Dante, Divina Commedia (Scartazzini's edition.) *Three times a week for the year.* PROFESSOR FAY.

(Open to students who have had two years of French.)

**Philosophy 4.** — History of Philosophy. *Three hours a week for the first term.* PROFESSOR SHIPMAN.

**5.** — Logic (advanced course). *Three hours a week for the second term.* PROFESSOR SHIPMAN.

**Jurisprudence.** — Ancient Law; Roman Law; International Law; Lectures. *Three hours a week for the year.* PRESIDENT CAPEN.

**Mathematics 3.** — Taylor's Differential and Integral Calculus. *Three hours a week for the second term.* PROFESSOR BROWN.

**4.** — Differential and Integral Calculus (advanced course). *Three hours a week for the year.* PROFESSOR BROWN.

**5.** — Geometry of Three Dimensions; Advanced Analytic Geometry. *Three hours a week for the year.* PROFESSOR BROWN.

**6.** — Advanced Algebra. Elements of Determinants and Theory of Equations. *Two hours a week for the second term.* PROFESSOR BROWN.

**Engineering 1.** — Descriptive Geometry: Shades and Shadows; Perspective. *Four hours a week for the second term.*
PROFESSOR BRAY.

**2.** — Steam Engine, Theory and Construction. *Three hours a week for the second term.* PROFESSOR BRAY.

**3.** — Applied Mechanics. *Four hours a week for the year.*
PROFESSOR BRAY.

**4.** — Mechanical Drawing. (See Engineering Courses.) *Three hours a week.* MR. SANBORN.

**5.** — Mechanical Drawing (advanced course). (See Engineering Courses.) *Three hours a week.* MR. SANBORN.

**Physics 3.** — Physical Laboratory: Mechanics and Electricity, Stewart and Gee; Sound, Heat, and Light, Glazebrook and Shaw. *Three hours a week for the year.* PROFESSOR HOOPER.

**4.** — Physical Laboratory (advanced course): Mechanics and Electricity, Stewart and Gee; Electrical Testing, Kempe; Absolute Measurement, Gray. *Three hours a week for the year.*
PROFESSOR HOOPER.

**5.** — Electricity: Thompson's Dynamos; Kopp's Electrical Transmission of Energy. Recitations and Lectures. *Three hours a week for the year.* PROFESSOR HOOPER.

**6.** — Philosophy of Physics: Lectures. *Two hours a week for the first term.* PROFESSOR DOLBEAR.

(Course 6 may be taken as an extra elective only.)

**7.** — Spencer's First Principles. *Two hours a week for the second term.*
PROFESSOR DOLBEAR.

**Astronomy.** — Young's Astronomy. *Two hours a week for the first term.*
PROFESSOR DOLBEAR.

**Chemistry 2.** — Qualitative Analysis: Basic Analysis; Lectures and Laboratory Work. *Three hours a week for the second term.*
PROFESSOR COMEY and MR. DURKEE.

**3.** — Qualitative Analysis, continued: Acid Analysis; Analysis of Salts and Natural Products. *Three hours a week for the first term.*
PROFESSOR COMEY.

**4.** — Quantitative Analysis: Gravimetric and Volumetric Analysis; Analysis of Ores. *Three hours a week for the year.*
PROFESSOR COMEY

(Course 4 is open to students who have taken Course 2.)

**5.** — Quantitative Analysis (advanced course) : Analysis of Water, Food Products, etc. *Three hours a week for the second term.*

PROFESSOR COMEY.

**6.** — Organic Chemistry. Lectures, Recitations, and Laboratory Work. *Three hours a week for the second term.*

PROFESSOR COMEY.

(Course 5 is open to students who have taken Course 4.)

**Natural History 1.** — Botany : Structural and Morphological Botany; Vegetable Histology. *Three hours a week for the second term.*

PROFESSOR MARSHALL.

**2.** — Human Physiology and Anatomy : Martin, The Human Body. *Three hours a week for the first term.* PROFESSOR MARSHALL.

**3.** — Zoölogy, Packard's. *Three hours a week for the second term.*

PROFESSOR MARSHALL.

**4.** — Geology, Le Conte's, with Lectures. *Three hours a week for the first term.* PROFESSOR MARSHALL.

**5.** — Mineralogy : Qualitative and Quantitative Blow-Pipe Analysis. *Three hours a week for the second term.*

PROFESSOR MARSHALL and MR. DURKEE.

**6.** — Biology, Huxley and Martin's. *Three hours a week for the second term.* PROFESSOR MARSHALL.

**7.** — Geology and Palæontology (advanced course) : Winchell's Geological Studies. *Three hours a week for the second term.*

PROFESSOR MARSHALL.

**Oratory 2.** — Individual Recitations, with Private Drill; Original Declamations; Practice in Debate. *One hour a week for two years.*

PROFESSOR MAULSBY.

## ENGINEERING COURSES.

The degree of Bachelor of Mechanic Arts is conferred on those students who complete the prescribed studies in the department of Engineering. The studies are arranged in two courses, for civil and electrical engineers, and the course for which the degree is conferred is stated in the diploma.

Beginning with the year 1892–93, the regular course for students in this department will extend over four years. Until further announcement is made, there is offered to those who at the end of the first year shall have obtained an average of seventy-five per cent the option of completing their course and receiving the degree in two additional years (see page 45); but, in order to continue upon this course, the student must maintain his previous standing.

Students of the Classical and Philosophical Courses may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Mechanic Arts after a post-graduate course of one year in this department.

### ELECTRICAL ENGINEERING.

The aim of the course in Electrical Engineering is to impart such information, and afford such mental discipline and manual training, as will enable a young man of ability to occupy a responsible position in any branch of electrical engineering. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The plan of the course is as follows: —

#### FIRST YEAR.

##### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* Mr. Sanborn.

**Mechanical Drawing.** — Geometric and Orthographic Drawing. *Three hours a week.* Mr. Sanborn and Mr. Daniels.

**Freehand Drawing.** — Sketching of Working Drawings; Lettering. *One hour a week.* Mr. Sanborn.

**Practical Work.** — Woodwork; Carpentry; Pattern-Making; Turning. *Two hours a week.* Mr. Kirk.

**Rhetoric.** — Extemporaneous Composition. *Two hours a week.*
PROFESSOR SHIPMAN.

**French.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* —— ——

or,

**German.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

### Second Term.

**Mathematics.** — Spherical Trigonometry; Physical Arithmetic. *Four hours a week.* MR. SANBORN.

**Descriptive Geometry.** — Shades and Shadows; Perspective. *Four hours a week.* PROFESSOR BRAY.

**Drawing.** — Orthographic and Mechanical Drawing. *Three hours a week.* MR. SANBORN.

**Physics.** — Mechanics, Daniell's Principles of Physics. *Three hours a week.* PROFESSOR HOOPER.

**Rhetoric.** — Extemporaneous Composition. *One hour a week.*
PROFESSOR SHIPMAN.

**French.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* —— ——

or,

**German.** — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.*
PROFESSOR FAY.

## SECOND YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Four hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Elements of Mechanism.** — Construction of Cams; Linkwork; Gears, etc. *One hour a week.* MR. SANBORN.

**Drawing.** — Detail and Assembly Drawings. *Two hours a week.*
MR. SANBORN.

**French.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.* —— ——

or,

**German.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hours a week.*
PROFESSOR FAY.

ELECTIVE. — In addition to the above, one of the following elective studies: —

**English Philology.** — History of the English Language. *Three hours a week.* PROFESSOR MAULSBY.

**English Literature.** — 1840 to the present time. *Three hours a week.* PROFESSOR MAULSBY.

**Rhetoric.** — Carpenter's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

**Second Term.**

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* PROFESSOR BROWN.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* PROFESSOR HOOPER.

**Practical Work.** — Filing; Turning; Screw-cutting. *Two hours a week.* PROFESSOR HOOPER.

**Drawing.** — Detail and Assembly Drawings. *Two hours a week.* MR. SANBORN.

**French.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.*

or,

**German.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Göthe, Hermann and Dorothea; one essay in German. *Three hours a week.*

## THIRD YEAR.

**First Term.**

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Chemistry.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.* PROFESSOR COMEY and MR. DURKEE.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Physical Laboratory.** — Magnetic and Electrical Measurements; Construction of Apparatus; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Drawing.** — Machine Drawing. *One and a half hours a week.* MR. SANBORN.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Steam-Engine,** — Theory and Construction. *Four hours a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Physical Laboratory.** — Magnetic and Electrical Measurements; Construction of Apparatus. *Two hours a week.* PROFESSOR HOOPER.

**Drawing.** — Boiler and Steam Engine Drawing. *One and a half hours a week.* MR. SANBORN.

## FOURTH YEAR.

### First Term.

**Mathematics.** — Theory of Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Dynamics of Machines.** — General Theory of Machines; Theory of Prime Movers; Construction and Location of Machines; Designs and Reviews of Special Machines. *Two hours a week.* PROFESSOR BRAY.

**Electricity.** — Thompson's Dynamo-Electric Machinery; Kopp's Electrical Transmission of Energy; Systems of Lighting; Lectures and Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Dynamo Testing; Accumulators; Photometry of Arc and Incandescent Lamps; Testing of Lines and Conductors. *Five hours a week.* PROFESSOR HOOPER.

**Drawing.** — Machine Designing. *Three hours a week.* MR. SANBORN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

### Second Term.

**Electricity.** — Fleming's Induction of Currents; Design of Dynamos; Electrical Railways; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Construction of Electrical Machinery; Special Investigations. *Five hours a week.* PROFESSOR HOOPER.

**Technical Applications of Electricity.** — Lectures on Telegraph, Telephone, Electro-metallurgy, etc. *Two hours a week.* PROFESSOR DOLBEAR.

**Political Economy.** — Marshall's; Fawcett's; Lectures. *Four hours a week.* PRESIDENT CAPEN.

**English Composition.** *One hour a week.* PROFESSOR SHIPMAN.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in the department of Civil Engineering has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. It differs from the preceding in offering branches of special technical value to civil engineers in the place of electricity and its applications. The plan of the course is as follows: —

The course for the first year is identical with that in the Electrical Engineering Course. (See pages 39, 40.)

### SECOND YEAR.

#### First Term.

**Mathematics, French or German, Physics, and Elective.** — As in the Electrical Engineering Course. (See pages 40, 41.) *Thirteen hours a week.*

**Surveying.** — Principles of Surveying; Lectures and Recitations. *Two hours a week.* MR. SANBORN and MR. DANIELS.

**Drawing.** — Plotting; Field Work with Chain, Compass, and Transit. *Three hours a week.* MR. DANIELS.

#### Second Term.

**Mathematics, French or German, and Physics.** — As in the Electrical Engineering Course. (See page 41.) *Nine hours a week.*

**Mathematical Astronomy.** — *Two hours a week.* PROFESSOR BROWN.

**Surveying.** — Lectures and Recitations. *Two hours a week.* MR. SANBORN and MR. DANIELS.

**Drawing.** — Plotting and Topographical Drawing; Field Work with Transit and Level. *Three hours a week.* MR. DANIELS.

### THIRD YEAR.

#### First Term.

**Mathematics, Mechanics, and Chemistry.** — As in the Electrical Engineering Course. (See page 41.) *Eleven hours a week.*

**Drawing.** — Topographical Drawing; Field Work with Plane Table and Stadia. *Three hours a week.* MR. DANIELS.

OPTION. — **Electricity.** — Units; Theory of Measurements; Electrical Calculations. *Two hours a week.* PROFESSOR HOOPER.

or,

**Geology.** — Descriptive and Practical Geology. *Two hours a week.* PROFESSOR MARSHALL.

### Second Term.

**Mathematics, Mechanics, and Steam Engine.** — As in the Electrical Engineering Course. (See page 42.) *Eleven hours a week.*

**Drawing.** — Machine Drawing; Boiler and Steam Engine Drawing; Structure Drawing. *Three hours a week.* MR. SANBORN.

OPTION.[1] — **Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. *Two hours a week.* PROFESSOR HOOPER.

or,

**Chemistry.** Basic Qualitative Analysis; Lectures and Laboratory Work. *Three hours a week.* PROFESSOR COMEY and MR. DURKEE.

## FOURTH YEAR.

### First Term.

**Mathematics, Dynamics of Machines, and English.** — As in the Electrical Engineering Course. (See page 42.) *Five hours a week.*

**Civil Engineering.** — Strength of Materials; Laboratory Work with Testing Machine; Stability of Structures of stone, wood, and iron. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Railways and Highways; Lectures and Recitations. *Three hours a week.* PROFESSOR BRAY.

**Drawing.** — Drawing and Field Work connected with Road Engineering. *Two hours a week.* MR. DANIELS.

OPTION. — **Electricity.** — Thompson's Dynamo-Electric Machinery; Kopp's Transmission of Energy; Systems of Lighting; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

or,

**Chemistry.** — Qualitative Analysis, continued. Acid Analysis; Analysis of Salts and Natural Products. *Three hours a week.* PROFESSOR COMEY.

[1] Students electing Electricity in the third year will continue that subject in the fourth year; and those electing Geology and Chemistry in the third year will continue Chemistry.

**Second Term.**

**English and Political Economy.** — As in the Electrical Engineering Course. (See page 42.) *Five hours a week.*

**Civil Engineering.** — Bridge and Roof Building, Drainage and Sewerage; Hydraulics; Masonry Construction. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Economic Considerations, with Designing of Mechanical Structures. *Two hours a week.* PROFESSOR BRAY.

OPTION. — **Electricity.** — Fleming's Induction of Currents; Design of Dynamos; Electrical Railways; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**or,**

**Chemistry.** — Quantitative Analysis, Gravimetric and Volumetric. *Four hours a week.* PROFESSOR COMEY.

**Preparation of Thesis.**

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## THREE YEARS' COURSE IN ELECTRICAL ENGINEERING.

(See page 39.)

The course for the first year is identical with that of the four years' course. (See pages 39, 40.)

### SECOND YEAR.

**First Term.**

**Mathematics.** — Analytic Geometry. *Four hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations, Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Physical Laboratory.** — Mechanics; Electricity; Sound, Heat and Light. *Three hours a week.* PROFESSOR HOOPER.

**Chemistry.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.* PROFESSOR COMEY and MR. DURKEE.

**Drawing.** — Detail and Assembly Drawing. *Two hours a week.* MR. SANBORN.

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* PROFESSOR BROWN.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Steam Engine,** — Theory and Construction. *Four hours a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Physical Laboratory.** — Mechanics; Electricity; Sound, Heat and Light. *Three hours a week.* PROFESSOR HOOPER.

**Drawing.** — Boiler and Steam Engine Drawing. *Two hours a week.* MR. SANBORN.

**Practical Work.** — Filing; Turning; Screw-cutting. *Two hours a week.* PROFESSOR HOOPER.

## THIRD YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Electricity.** — Thompson's Dynamo-Electric Machinery; Kopp's Electrical Transmission of Energy; Systems of Lighting; Lectures and Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Dynamo Testing; Accumulators; Photometry of Arc and Incandescent Lamps; Testing of Lines and Conductors. *Five hours a week.* PROFESSOR HOOPER.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Electricity.** — Fleming's Induction of Electrical Currents; Design of Dynamos; Electrical Railways; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Construction of Electrical Machinery; Special Investigations. *Five hours a week.* PROFESSOR HOOPER.
**Drawing.** — Machine Designing. *Two hours a week.* MR. SANBORN.
**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.
**Preparation of Thesis.**

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## THREE YEARS' COURSE IN CIVIL ENGINEERING.

The course for the first year is identical with that of the four years' course. (See pages 39, 40.)

### SECOND YEAR.

#### First Term.

**Mathematics, Physics, and Chemistry.** — As in the three years' course in Electrical Engineering. (See page 45.) *Eleven hours a week.*
**Drawing.** — Plotting and Topographical Drawing; Field Work. *Three hours a week.* MR. DANIELS.
**Surveying.** — Principles of Surveying; Lectures and Recitations. *Two hours a week.* MR. SANBORN and MR. DANIELS.
**Rhetoric.** — Carpenter's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

#### Second Term.

**Mathematics, Physics, and Steam Engine.** — As in the three years' course in Electrical Engineering. (See page 46). *Ten hours a week.*
**Drawing.** — Boiler and Steam Engine Drawing; Field Work and Topography. *Three hours a week.* MR. SANBORN and MR. DANIELS.
OPTION. — **Physical Laboratory.** — Mechanics; Electricity; Sound, Heat, and Light. *Three hours a week.* PROFESSOR HOOPER.

**or,**

**Chemistry.** — Basic Qualitative Analysis; Lectures and Laboratory Work. *Three hours a week.* PROFESSOR COMEY and MR. DURKEE.

### THIRD YEAR.

#### First Term.

**Mathematics, Applied Mechanics, and English.** — As in the three years' course in Electrical Engineering. (See page 46.) *Eight hours a week.*

**Civil Engineering.** — Strength of Materials; Laboratory Work with Testing Machine; Stability of Structures of stone, wood, and iron. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Railways and Highways; Lectures and Recitations. *Three hours a week.* PROFESSOR BRAY.

**Drawing.** — Drawing and Field Work connected with Road Engineering. *Three hours a week.* MR. DANIELS.

**Second Term.**

**Mathematics, Applied Mechanics, and English.** — As in the three years' course in Electrical Engineering. (See pages 46, 47.) *Eight hours a week.*

**Civil Engineering.** — Bridge Building; Drainage and Sewerage; Hydraulics. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Economic Considerations, etc. *Two hours a week.* PROFESSOR BRAY.

**Drawing.** — Sewers; Bridge Designing. *Three hours a week.* MR. DANIELS.

**Preparation of Thesis.**

# Departments of Instruction.

**Latin.** — The required course of study in this department extends through two years. It is arranged and conducted to secure a good practical knowledge of the Latin Language, and to make students acquainted with ancient Roman literature. The leading purpose is the development of acuteness and discrimination. Habits of critical study and accurate thinking are fostered, with a view to the acquisition of those qualities of mind essential to success in any intellectual pursuit. In the early part of the course the forms and construction of the language are carefully studied; and, as a means of acquiring a knowledge of the structure of the language, careful attention is given to translation from English into Latin. In translation from the Latin, both oral and written, the appropriate English rendering of the original holds an important place throughout the entire course. Reading without translation, useful for those who may hereafter read Latin by themselves, is practised also. The comparative etymology of Latin, Greek, and English likewise receives attention. Lectures on the history of the Latin language and literature are given to the Freshman class. The elective courses are especially adapted to the wants and attainments of those who elect the study; but in all cases more attention than before is given to the subject-matter, and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrative lectures, and investigations by the students themselves; and essays embodying the results of their work are read and discussed before the class.

The aim of the department is to stimulate and foster independent and scholarly effort. Accordingly, men of marked linguistic talent who can afford the necessary time are encouraged to do extra work.

**Greek.** — During the Freshman year the student is trained in the reading and writing of Attic Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, studies are made of the customs and daily life of the people. The relations of the language to the English tongue are discussed, and the course is shaped throughout with a view to develop, discipline, and enrich the linguistic resources of the student. A critical study of the orators and of the dramatists is undertaken in the Sophomore year. At suitable points, discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

Throughout the course the practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature.

Students who have entered without Greek on the new A. B. course, may elect elementary Greek. They will be given instruction for five hours a week. It is expected that their previous training in language will enable them to accomplish in their first year the work usually done in preparation for college, and thus fit them to join, at the beginning of their Sophomore year, the Freshmen entering on the classical course.

Opportunity to elect Greek is offered throughout the Junior and the Senior year. With the Juniors the Symposium of Plato and the Clouds of Aristophanes are used, supplemented with sight-reading in the Odyssey, Herodo-

tus, the orations of Lysias, and Greek lyrics. An extended course in Greek prose composition may be taken. Members of the Senior class electing Greek may be sufficiently advanced to read Aristotle's Ethics and the Idylls of Theocritus.

**English Literature.** — The study of English Literature is open, as an elective, from the middle of Sophomore to the close of Senior year. The two years assigned to the study of representative authors from Chaucer to Browning, are intended primarily to give an appreciative knowledge of our literature. While acquaintance with the views of eminent critics is encouraged, the student is urged to form carefully his own opinions, based upon what literature he has actually read. Some attention is paid to biographical details and to striking events in the history of the period, but to read intelligently the literature itself is esteemed of first importance. The general method pursued is to examine a few masterpieces in the class-room with some minuteness, and to supplement this study with the private reading of other works of the author considered. Students are frequently asked to investigate special topics, and to report to the class the results of their labor. Multiple copies of many of the works studied in the class-room are to be found in the library. The latter half of the Senior year is devoted to the treatment of a special subject: as, the history of the drama, the development of the novel, the principles of literary criticism. In studying the history of English the aim of the course is to follow in outline the stages of the development of the language, with some reference to kindred forms in French and German, and special attention to the ancestry of modern English words.

**Modern Languages.** — Five consecutive courses are offered in French, five in German, and one in Italian. All can-

didates for admission are required to pass examination upon the elements of either German or French; those admitted without Greek must also be prepared for advanced standing in the alternate modern language. In all courses the minimum language (that in which merely the elementary examination has been passed) becomes a required study for Freshman year, and for an additional year in the two literary courses in which Greek is not required for admission. Elective privileges in the minimum language are offered for the remainder of the course. Candidates for the degree of Ph. B. pursue their advanced language also as a required study for a year and a half from entrance, with elective privileges for the remainder of their course. Candidates for the degree of A. B. without Greek may either drop their maximum language to take up Elementary Greek, or pursue it as an optional and elective study until the end of Junior year. Italian is an elective only to those who have pursued French for at least two years.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requisition. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department.

Hence, in the elementary courses facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced courses, the systematic study

of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. In all courses composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach to speak the languages, the ear of the student is trained from the outset to hear and to understand them when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

**Oratory.** — Oratory is taught with the purpose of making prominent its practical side. Exercises in breathing, vocalization, and gesture are introduced; specimens of good literature are read and recited; leading principles are discovered and illustrated, — all with reference to the ultimate practical value to the student. In the first term of Sophomore year attention is given to acquiring the power to read aloud with intelligence, naturalness, and force. Gesture is introduced in the second term. In the advanced course, which may be elected through the Junior and Senior years, the work consists of individual study and delivery of selections, also the preparation of original declamations and debates, with rehearsal and criticism. Occasional public recitals give the student opportunity for gaining ease before a general audience. It is remembered that good public speaking is an art rather than a science, and is therefore to be learned less through knowledge of theories than by well-directed and repeated practice.

**Rhetoric.** — The course of instruction in Rhetoric aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are assigned, with some variety of method, at the time of writing, — usually not the same topic for all, but a list is furnished from which each writer may

select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. Text-books are used as the basis of instruction, and made, as far as possible, helps to the intelligent discussion of principles rather than burdens to be carried. The close relation of Rhetoric to both Psychology and Logic is kept in sight. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the end of the fourth year. The student's work in Literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays.

The required Rhetoric may be followed by an elective course in some of the applications of the subject, or exclusively in composition.

**Logic.** — In the required study of Logic during the first term of Senior year, prominence is given to its consideration as a science. Deduction, accordingly, is chiefly studied, but not to the exclusion of Induction. Much attention is also given to such practical exercises as may cultivate accuracy and celerity of thinking. Pursuing applied logic still farther, the discussions include a full treatment of fallacies. Various recent modifications of logical doctrine and the full consideration of Induction are reserved for an elective course in the second term.

**Psychology.** — Psychology is assigned to the second term of Junior year. Without overlooking the results of psycho-physical investigation, the subject is chiefly studied in those manifestations of mind through consciousness which are within the observation of all. To observe these facts with care, to analyze, compare, and classify with a view to

a rational explanation, is in part the method pursued. The study is regarded as the proper preparation for Philosophy, in which subsequent elective courses are offered.

**Ethics.** — Ethics is a required subject four hours a week during the first term of Senior year. The course embraces the study of leading ethical theories, ancient and modern. In addition to recitations from the text-book, students conduct their own investigations, under the direction of the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of modern ethical doctrines. The practical side of the subject is not neglected.

**Political Economy.** — Political Economy is required of the Seniors, including those in the engineering courses, four hours a week during the last term. The course begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows the consideration of the fundamental principles of economics. Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

**Law.** — Law is offered as an elective to Seniors, three hours a week for a year. In the first term Ancient Law is the subject of study. The object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a

Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

**Mathematics.** — The study of Mathematics is required through the Freshman year and the first term of the Sophomore year. The branches taught are algebra, through the subjects included in most college algebras previous to the theory of equations; solid and spherical geometry; plane and spherical trigonometry; and plane analytic geometry. Throughout the course, two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly, and mainly, to train the mathematical faculties, so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

The students of all courses have an opportunity to continue algebra during the second term by the study of determinants and the theory of equations.

Analytic geometry may be carried beyond the prescribed course by the study of higher plane curves and geometry of three dimensions.

Differential and integral calculus is required for three terms in the engineering courses. This study is open as an elective to any student of the Sophomore, Junior, and Senior classes.

**Physics.** — The study of Physics is begun with the consideration of mechanics in the middle of the Sophomore

year, by those in the literary courses, and in the middle of the first year by those in the technical courses, and is continued for a year and a half in both cases. The course consists of study and recitations. Daniell's Principles of Physics is used as a text-book ; critical comments and much additional matter are added; also frequent lectures are given, with experiments. As the principles of mechanics underlie every department of physics, more time is devoted to that subject than to any other, a term being given to it alone. In connection with the text, the student is given for solution a large number of problems relating to velocity, acceleration, force, energy, simple harmonic motion, impact, friction, and gravitation.

Next to mechanics, the subjects of heat and electricity receive most attention. The aim is to present the science of Physics, not as a series of detached subjects, but rather as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch of the subject there are frequent returns to those first principles. The recent rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

During the Senior year there is offered an elective course of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the physical laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the

subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note-book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

**Chemistry.** — The instruction in Chemistry begins with a course in general chemistry, assigned to the Junior year in the classical and philosophical courses, and to the third year in the engineering courses. The instruction is given by means of lectures, laboratory work, and recitations. Lectures illustrated with experiments are given twice a week, covering the field of theoretical and descriptive inorganic chemistry. The aim of these lectures is to give the student a thorough understanding of the theories of chemistry, with a knowledge of the more important elements and their compounds. A few subjects are taken up in full, while the great mass of uncommon compounds are treated briefly. Commercial methods of manufacturing the more common substances are considered. The aim of the course is to make it practical, as a part of a liberal education. Laboratory work, four hours a week, is required of all students in general chemistry, and this is regarded as the most important part of the course. Individual instruction is given during these hours, which are spent on experiments designed to fix on the mind of the student the theories and the descriptive matter of the lectures. Purely mechanical work is made impossible by

the nature of the experiments and by the instructor's frequent personal intercourse with the student. Recitations are held every two weeks on the matter of the preceding lectures, and supplemented with monthly written examinations.

Remsen's text-books are used, more as books of reference than as text-books, the student being encouraged to take full notes of the lectures, and to rely on them. For those who may wish to pursue the subject farther, elective courses are given in qualitative analysis, quantitative analysis, and organic chemistry. The first two courses, from the nature of the subject, are conducted almost wholly by means of laboratory work. The design is to give the student a complete and practical training in all the common methods of analysis, so that he may be fitted to undertake successfully any variety of analytical work. The course in organic chemistry consists of a series of lectures on the various classes of organic compounds, together with laboratory work, to illustrate the methods of synthesis and analysis of these compounds.

**Natural History.** — The Natural History course is open to undergraduates as an elective study. Botany is the first branch of study in the course. The principles of structural and morphological botany and vegetative reproduction are taught by examination of the higher plants, while vegetable histology and infusorial plants are carefully studied with the aid of the microscope. Human Physiology and Anatomy are studied from the text-book and illustrated with human skeletons, a manikin, and histological sections for study with the microscope. Dissections of lower vertebrates are made by the student. Zoölogy is studied by means of text-book and lectures during the second term of Junior year. In the first term of Senior year, Geology is studied from text-book, and illustrated by means of maps and systematic collections of rocks and fossils.

Mineralogy and Biology are studied in the second term of Senior year. The course in mineralogy is designed to help the student to become acquainted with the more common minerals, and to teach him the methods employed in qualitative and quantitative blowpipe analysis. The course in biology makes the student acquainted with typical forms of plant and animal life, by careful dissections and preparations for study with the microscope.

**Electrical Engineering.** — The practical work of the course begins in the wood-shop, where each student is supplied with a bench and set of tools, and works under the immediate supervision of the instructor. The metal working of the second year is carried on in a large machine-shop in Boston, each student working with and under the direction of a regular machinist.

In addition to the regular physical laboratory work, engineering students are instructed in the care and management of the storage battery, engine, dynamos, and lamps. One of the fourth-year engineers is placed in charge of the storage battery; others take turns in running the dynamos for the arc and incandescent lighting of the library, chapel, and laboratories. A large amount of work is also done in testing engines, dynamos, and motors, and in determining characteristic curves and efficiencies. Those who are skilful in the use of tools construct apparatus for the work they are engaged in, and for the general use of the laboratory. All current and potential indicators, rheostats, switch-boards, switches, keys, and cut-outs used in the dynamo-room, several of the dynamos, also many of the galvanometers, resistance-coils, and bridges used in the laboratory have been thus constructed. All wiring connected with the electric-light installation is also done by students.

During the fourth year, Thompson's Dynamo-Electric Machinery, Kopp's Electrical Transmission of Energy, and

Fleming's Induction of Electric Currents are read and fully discussed. Lectures on electrical theory, telegraphy, telephony, electro-metallurgy, wiring, systems of electrical distribution, railway work, and dynamo-designing are given, and numerous electrical problems are solved. Dynamos and motors of various types are designed, and drawings of them made, not indeed so much for the purpose of fitting students to design dynamos, as to fix firmly in mind the principles underlying the construction of such machinery. Topics are assigned to be investigated, or worked out, and presented to the class in the form of papers.

Before graduation each student presents a thesis on some electrical subject to which he has given special attention during the last year of his course.

**Civil Engineering.** — Instruction in Civil Engineering is conducted by means of text-books and lectures, laboratory work and practice, in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments is taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The course in Roads and Railroads includes study in the class-room of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a

line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry, the instruction is given by means of text-book and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The course in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

# Buildings and Equipment.

## BUILDINGS.

The college buildings consist of three dormitories: College Hall, containing the recitation rooms, and chemical and physical laboratories; Barnum Museum; Goddard Chapel; the Gymnasium; and the Library.

## LIBRARY.

The Library contains twenty-eight thousand bound volumes and about eleven thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D.D., of Chicago. In addition to the general library, there is the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets) to which, on application, students have free access. On the tables are sixty periodicals; and in the same building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been thirteen hundred volumes. The Library is open to all members of the College every day in the week except Sunday.

## MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 from a donation of the late P. T. Barnum, to whom also the College is chiefly indebted for the extensive collection of zoölogical specimens that has since been

acquired. These cover all the grand divisions of the animal kingdom, and include in some departments many examples of rare genera and species, thus offering to the student of zoölogy illustrations of sufficient range to teach the relations between the lower and higher forms of animal life.

The Museum has likewise furnished a long-needed depository for the other collections — mineralogical, geological, and botanical — that have been gathered since the founding of the College, with a constant aim to acquiring a series of specimens which should be valuable in actual teaching. Of the mineralogical and geological specimens a considerable part still await classification and exhibition. Among others already displayed are systematic collections illustrating the chemical and physical properties of minerals. The botanical specimens comprise, beside a full representation of the flora of New England, numerous examples from the Southern and Western States. The total number of specimens of all kinds included in the Museum is over twenty thousand.

The laboratories and lecture rooms of the department of Natural History are also located in the Museum building. Among appliances useful in practical work, the geological laboratory has instruments for making rock-sections and for polishing minerals; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals and the analysis of ores; the biological laboratory also is well supplied with the instruments needed for histological research, including a large Thoma microtome and several compound microscopes.

### GYMNASIUM.

The Goddard Gymnasium, the gift of Mrs. Mary T. Goddard, is fully equipped with the best modern apparatus, and provided with shower-bath, tub-baths, dressing-rooms, and lockers. It is open through the college year, and instruc-

tion is given four times a week from the middle of November to the middle of March.

Gymnastic exercise is optional, but is recommended to all students. The kind of exercise depends on the physical condition of each man, as determined by careful examination, including measurements and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting bar, and vaulting horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

### PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics.

The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of solar spectrum; also apparatus for projection with sunlight, lime and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electromotive force, besides a variety of instruments for accurate measurement.

### ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electronometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electrodynamometer with coils a metre in diameter.

The dynamo-room contains a B. F. Sturtevant high speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a small alternator, a special 4,000-watt machine for experimental purposes, and a pair of 110-volt 1,500-watt machines for the Library three-wire installation, and for charging the storage battery. Three other machines are in process of construction, — one of 12 kilo-watts and 110 volts. Steam power is furnished by two Whittier tubular boilers.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting. Connected with the laboratories is a work-shop containing several lathes, with an outfit of wood and metal working tools used in the construction and repair of apparatus. Most of the rough and some of the fine apparatus used in the dynamo-room and laboratories is manufactured in this room.

### CHEMICAL LABORATORY.

The Chemical Laboratory has desks for forty-three students, and is supplied with reagent bottles, sinks, and hoods. The lighting is by electricity. The store-room contains a full stock of ordinary chemical apparatus, a full set being furnished to each student working in the laboratory. Students in the advanced courses work in the private laboratory of the professor in charge, and have access to the weighing-room, where there are accurate chemical balances for quantitative work; standard books of reference are also at hand.

# General Information.

### RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but an effort is made to give variety and interest to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere. A Sunday-school is maintained in connection with Sunday worship, and a Bible class, composed of students, is in charge of one of the professors.

The RUSSELL LECTURE, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students on the first Sunday of the College year, by either a clergyman or a layman, on a subject prescribed by the testator.

### REQUIRED AND ELECTIVE STUDIES.

The programme requires sixteen to eighteen recitations a week or their equivalent, except in the second term of the Senior year, when thirteen are required. Two consecutive hours of work in the laboratories, or in drawing, and three hours in all other practical work, are reckoned as one programme hour. While the electives designated for each class are open to the students of that class, electives designated for a lower class may also be taken, but special permission must be obtained to take an elective of a higher

class. In addition to the regular electives requisite to fill out the programme, extra electives may be taken if, in the judgment of the Faculty, they can be profitably pursued. Choice of electives or optional studies for the first term must be signified in writing to the Faculty on or before the first Saturday of the College year, and for the second term, on or before the last Saturday preceding mid-year.

### SPECIAL STUDENTS.

Students, wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. All applicants for special courses shall satisfy the instructors in those courses that they are prepared to pursue the same.

2. Every special student having less than fifteen programme hours a week will be required to obtain seventy per cent in each course pursued by him. This rule shall apply to the work of the term as well as to examinations.

3. Special students under rule 2 who fail in any course will be required to take that course again the next year.

4. Special students whose programme hours number fifteen or more will be treated, as regards conditions, in the same way as regular students.

5. A special student, on leaving college, shall be entitled to a certificate giving the percentage attained in each course pursued, and signed by the President and Secretary.

### TERMS AND VACATIONS.

The College year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no College exercises during a recess of two weeks at Christmas, three days at Thanksgiving, and three at Fast Day.

### EXPENSES.

The tuition is one hundred dollars a year.

Students working in the laboratories are charged for certain materials used, and for breakage. Any damage done

by students to college property is charged in the term bills. Students board in commons at $3.50 per week; in private families at $3.50 to $5.00. Other expenses vary with the economy of each student. Students furnish their own rooms.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement.

The following estimates represent the necessary annual expenses: —

| | | |
|---|---|---|
| Tuition | $100.00 | $100.00 |
| Gymnasium | 4.00 | 4.00 |
| Half room-rent, with care | 15.00 | 75.00 |
| Board, $3.50 to $5.00 a week | 133.00 | 190.00 |
| Total | $252.00 | $369.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships and other aids must be made to the Faculty on or before the first day of November; and if the applicant be a minor, must be sanctioned by his parent or guardian. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

The following scholarships of one hundred dollars each are awarded annually: —

Three State Scholarships, — Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS, —Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS, — Established in honor of the late William J. Walker, M.D., of Newport, R.I., and payable from the income of the Walker Fund.

FOUR PRIZE SCHOLARSHIPS OF NATURAL HISTORY, — Olmstead, Leavenworth, Miner, Tully, from funds contributed by the late Charles Hyde Olmstead, of Hartford, Conn.

TWO MOSES DAY SCHOLARSHIPS, — Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D.D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP, — Founded by the late Charles Robinson, LL.D., of Newton.

THE PATTERSON SCHOLARSHIP, — Founded by A. J. Patterson, D.D., of Roxbury, in the name of A. J. and Jane L. Patterson.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP, — Founded by William Oscar Cornell, of Providence, R.I.

THE ARA CUSHMAN SCHOLARSHIP, — Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP, — Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP, — Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP, — Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP, — Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP, — Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE HANNAH L. WHITING SCHOLARSHIP, — Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP, — Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP, — Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP, — Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP, — Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP, — Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP, — Founded by Henry F. Barrows, of North Attleborough.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP, — Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP, — Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP, — Founded by friends of the late E. H. Chapin, D.D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU 2d MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE GEORGE W. QUINBY MEMORIAL SCHOLARSHIP, — Founded by the widow and children of the late George W. Quinby, D.D., of Augusta, Maine.

THE HENRY E. COBB SCHOLARSHIP, — Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP, — Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP, — Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D.D., of Boston.

THE PERKINS SCHOLARSHIP, — Founded by James D. Perkins, of Brooklyn, N.Y.

THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made the best attainments in Oratory.

APPOINTMENTS. — The pay of a monitor is *twenty dollars* a year; that of the bell ringer, and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES. — In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the Sophomore class, of the third section of Chapter X. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the Freshman year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers of the Senior class.

Two prizes, of *twenty* and *ten dollars* respectively, to members of the Junior class, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to members of the Sophomore class.

The selections for reading and declamation must be approved by the Professor of Oratory. The names of competitors for the prizes in reading and elocution must be handed to the President at least two weeks before the day of trial.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded, unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

SPECIAL HONORS will be conferred at Commencement upon any member of the graduating class who shall have complied with the following conditions: —

1. He must have attained grade A (over eighty-seven per cent) in the required work of the subject in which he desires Honors, and grade B (seventy-five per cent) in the average of all the studies of his course for at least the two years preceding.

2. He must have passed satisfactory examinations on as much extra work in the study in which he desires Honors as would be equal to three hours a week for a year.

3. In this and a cognate study, he must, if a candidate for A. B. or Ph. B., have taken the equivalent of five hours a week for a year of elective work, and must have passed the examinations on them with distinction.

Departments are open for Honors as follows: —

I. Philosophy, II. Classics, III. Modern Languages, IV. Mathematics, V. Physics, VI. Chemistry, VII. Natural History, VIII. Civil Engineering, IX. Electrical Engineering.

A student is expected to apply for Honors as early as the middle of his Junior year, and may make up his standing in any study in which he is deficient. The grade of Honors, as well as the department, will be mentioned in the diploma and printed in the Catalogue. Special requisitions may be made in any department.

HONORABLE MENTION will be made in the Commencement programme and the annual Catalogue, of a student who has attained grade A or B in a subject to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, upon recommendation of

the Faculty, upon students who shall have completed the Classical course in a satisfactory manner.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have completed the Philosophical course under the same conditions.

THE DEGREE OF BACHELOR OF MECHANIC ARTS will be conferred upon students who shall have completed one of the Engineering courses under the same conditions.

Students of the Classical and Philosophical courses may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Mechanic Arts after a post-graduate course of one year in the Engineering department.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College, or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of A. B. or Ph. B., who shall complete an approved course of advanced study in one, or at the most two departments, during a residence of not less than one year, and shall either prepare a thesis or pass a satisfactory examination upon the work performed, as the professor in charge shall direct.

Candidates for this degree must make a written application to the Faculty before October first of the College year in which the degree is to be conferred, and if the degree is not taken after one year's study, he must also give a second notice three months before receiving the degree. The condition of residence may be waived by special permission.

THE DEGREE OF MASTER OF MECHANIC ARTS will be conferred on college graduates who hold the degrees of S. B., A. M. B., or C. E., under the same conditions as the degree of Master of Arts.

## DEGREES CONFERRED AT THE THIRTY-FIFTH ANNUAL COMMENCEMENT, JUNE 17, 1891.

### Honorary Degrees.

**A.M.**

JOHN DAVIS BILLINGS.
ARTHUR GUINESS ROGERS.

**D.D.**

CHARLES ELWOOD NASH, A.B., B.D.

**LL.D.**

WILLIAM EVANS DARBY.
JOHN WILKES HAMMOND, A.B., L.L.B.
JOSEPH H. WALKER.

### Degrees in Course.

**A.M.**

HARLEY NELSON PEARCE, A.B., 1880.
WILLIAM SHAW WHITE, A.B. (Brown University, 1888.)

**A.M.M.**

ALBERT DULEY BABSON, A.M.B., 1890.

**A.B.**

WILLIAM KENDALL DENISON.
GEORGE MAYO GERRISH.
ARTHUR WILDER GROSE.
GIDEON ISAAC KEIRN.
FREDERICK WILLIAM PERKINS.
ELMER ELBERT POWELL.
CHARLES LIVINGSTON STOVER.
GEORGE GILMAN TOWLE.
HIRAM AUSTIN TUTTLE.

**Ph.B.**

BENJAMIN FRAZIER CUNNINGHAM.
GEORGE CARROLL DOLLIVER.
CHARLES ROLLINS TUCKER.

**A.M.B.**

CHARLES OSCAR BOURNE.
ROBERT POND BROWN.
CHARLES STAPLES DAVIS.
WARREN HERBERT FISKE.
WILLIAM COURTNEY POTTLE.
JOSEPH WARREN PUTNAM.
FRANK HENRY STEPHENSON.
FRED WARREN TEELE.
BENJAMIN FRANKLIN THOMPSON.

**B.D.**

LUTHER WESTON ATWOOD.
HARRY FAY FISTER.
HENRY REUBEN ROSE.
WILLIAM SHAW WHITE.

## HONORS AWARDED AT THE THIRTY-FIFTH ANNUAL COMMENCEMENT.

**Latin.**

WILLIAM KENDALL DENISON.
GEORGE GILMAN TOWLE.
HIRAM AUSTIN TUTTLE.

**Chemistry.**

GEORGE CARROLL DOLLIVER.

## AWARDS OF PRIZES, 1890-1891.

**For Examination in Mathematics.**

A prize to FRANK GEORGE WREN of the Freshman Class.

**For Oratory.**

Prizes to ARTHUR WILDER GROSE and FREDERICK WILLIAM PERKINS of the Senior Class; FRANK ALLEN NORTH and WILLIAM SOUTHWICK GRAY of the Junior Class; WILLARD SHEPARD MARTIN and JOSEPH BYRON GROCE of the Sophomore Class.

# DIVINITY SCHOOL.

# Faculty of the Divinity School.

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ELMER H. CAPEN, D.D., *President.*
THOMAS J. SAWYER, D.D., *Dean.*
CHARLES H. LEONARD, D.D.
WILLIAM G. TOUSEY, A.M., B.D.
GEORGE T. KNIGHT, A.M., B.D., *Secretary.*
GEORGE M. HARMON, A.M., B.D.
ANSON B. CURTIS, PH.D.
DAVID L. MAULSBY, A.B.

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HENRY I. CUSHMAN, D.D.
ARTHUR G. ROGERS, A.M.

# Students.

## RESIDENT GRADUATES.

| | | |
|---|---|---|
| Fister, Harry Fay, B. D. | *East Cambridge* | 86 Thorndike St. |
| Torsleff, Andrew Jackson, B. D. | *West Somerville* | 22 Weare St. |

### Senior Class.

| | | |
|---|---|---|
| Bilkovsky, Anthony | *Detroit, Mich.* | West Hall, 22. |
| Blackford, Harry, A. B. (National Normal Univ.) | *El Dorado, Ohio* | West Hall, 25. |
| Conner, Ralph Everett | *So. Newmarket, N. H.* | West Hall, 28. |
| Eddy, William Best, A. B. | *Troy, N. Y.* | West Hall, 13. |
| Evans, Frederick Waldron | *Chelsea* | West Hall, 21. |
| Maxham, Herbert Olin, A.B. | *Medford* | 3 Marshall St. |
| Moulton, Herbert Frank | *West Somerville* | 50 Curtis St. |
| Sayles, John Augustus | *Somerset* | West Hall, 24. |
| Williams, Lester Ellsworth | *Nottingham, N. H.* | West Hall, 21. |

### Middle Class.

| | | |
|---|---|---|
| Gifford, Franklin Kent, A. B. (Harvard.) | *Somerville* | 359 Beacon St. |
| Markley, Howard Anthony | *Philadelphia, Pa.* | West Hall, 26. |
| Maxwell, Harley Davidson | *Moore's Mills, N. B.* | West Hall, 29. |
| Moore, Leslie | *Somerville.* | West Hall, 28. |

### Junior Class.

| | | |
|---|---|---|
| Ball, Clarence Leon | *Cambridge* | West Hall, 30. |
| Brown, Allen | *Cadillac, Mich.* | West Hall, 31. |
| Foster, Augustine Norwood | *Meriden, Conn.* | West Hall, 32. |
| Gerrish, George Mayo, A. B. | *Woburn* | West Hall, 23. |
| Grose, Arthur Wilder, A. B. | *Abington* | West Hall, 23. |
| Henry, Carl French, B. S. (Buchtel.) | *Geauga Lake, Ohio.* | West Hall, 31. |
| Hoyt, Hervey Hastings | *Peabody, Kansas* | West Hall, 24. |
| Leighton, George Edward | *Dexter, Me.* | West Hall, 32. |
| Morrison, Ira Daniel | *Brookings, So. Dak.* | West Hall, 22. |

| | | |
|---|---|---|
| Perkins, Frederick William, A. B. | *Roxbury* . . . | West Hall, 26. |
| Petrie, Omer Genere . . . . | *El Dorado, Ohio* | West Hall, 25. |

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|---|---|---|
| Butler, Thomas . . . . | *Philadelphia, Pa.* . | West Hall, 30. |
| Dickins, Curtis Hoyt . . . | *Philadelphia, Pa.* . | 154 Boston Ave. |
| Lesh, Henry Edgar . . . | *West Alexandria, O.* | West Hall, 29. |

**Sub-Junior Class.**

| | | |
|---|---|---|
| Audrus, Elmer Charles . . | *Grand Rapids, Mich.* | West Hall, 19. |
| Blair, Arthur Adolphus . . | *Manchester, N. H.* . | West Hall, 27. |
| Cardall, Alfred James. . . | *Bay City, Mich.* . | West Hall, 27. |
| Roscoe, Tom, M. D. . . . (Vt. Med. Coll.) | *Somerville*. . . . | 178 Central St., Somerville. |
| Smith, Ashley Auburn . . | *Auburn, Me.* . . . | 5 Emery St. |
| Tillinghast, James Dannals . | *Buffalo, N. Y.* . . | West Hall, 27. |
| Welch, Charles DeMerritt . | *Lynn* . . . . . | East Hall, 25. |
| Wells, Charles Henry. . . | *Barre, Vt.* . . . | West Hall, 23. |

**Special Students.**

| | | |
|---|---|---|
| Blackford, Alfred Newton . | *El Dorado, Ohio* . | West Hall, 25. |

**SUMMARY.**

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|---|---|
| Resident Graduates . . . . . | 2 |
| Senior Class . . . . . | 9 |
| Middle Class . . . . . | 4 |
| Junior Class . . . . . | 14 |
| Sub-Junior Class . . . . . | 8 |
| Special Student . . . . . | 1 |
| | 38 |

## Admission to the Theological Course.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to the Junior Class without examination. Candidates for the Four-Years Course are examined in some one of the Greek classics or in the Greek of the Gospels, and in the English studies usually pursued in High Schools.

Applicants may be admitted to the school for any period of not less than one year. Those applying for admission to advanced standing are examined in the studies which have been pursued by the class they propose to enter.

It is earnestly recommended that all who are contemplating a course of theology should take, as preliminary, a full collegiate course of study. The call is for men of liberal culture, and academic discipline is of great value as a preparation for professional studies. It has not been thought expedient, however, to make such a requirement, for it has been found that earnest and capable men aspire to the Christian ministry whose circumstances forbid so extensive preparation. To meet the wants of such, and yet provide for thorough and comprehensive development, a four-years course has been instituted.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis.

**Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes.

**Oratory.** — Practical Exercises in the reading of Scripture and Hymns.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief.

**Old Testament.** — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism; History of Hebrew Religion.

**New Testament.** — Hermeneutics; Criticism; Exegesis of Matthew's Gospel, with parallel and supplemental passages from the other Synoptics; The Life of Christ; Theology of The Synoptic Gospels.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletical Analysis.

**Oratory.** — Practice in the reading of Scripture, Hymns, and Sermon-literature.

## MIDDLE CLASS.

**Old Testament.** — I. Biblical Sociology: The Development of Jewish Political and Religious Life; Critical and Practical Exegesis of Selected Passages.

II. Messianic Prophecy: The Ideal Social Organism; Criticism and Exegesis of Messianic Texts; Old Testament Introduction, Literature, and Theology.

**New Testament.** — Criticism and Exegesis of the Fourth Gospel; Johannine Theology.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching.

### SENIOR CLASS.

**New Testament.** — Criticism and Exegesis of Selected Passages from Romans, 1 Corinthians, and Hebrews; Pauline Theology.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldea; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism.

**Ethics.** — Types of Ethical Theories; Christian Ethics.

**Natural Theology.** — Theistic Arguments; Special Studies with reference to the Evidences of Final Causes in Nature; Science and Religion; Anti-Theistic Theories.

**Homiletics.** — Lectures on Preaching; Sermon Writing and Preaching.

**Church Polity.** — The Polity of the Apostolic Church; The Polity of Special Churches Compared; The Government and Discipline of the Universalist Church.

**Pastoral Care.** — Personal Qualifications and Duties of the Pastor; The Administration of Religion in General; Organized Work in the Parish.

# Departments of Instruction.

## PSYCHOLOGY.

PROFESSOR TOUSEY.

*Four hours a week for the first term of the Sub-Junior year.*

The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

## LOGIC.

PROFESSOR TOUSEY.

*Three hours a week for the second term of the Sub-Junior year, and two hours a week for the first term of the Junior year.*

The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis, and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men.

The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed, — the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

## RHETORIC.

PROFESSOR LEONARD.

*Three hours a week for fourteen weeks with the Sub-Juniors.*

The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the chapters which deal with the art of constructing discourse, and with the methods of applying the principles of rhetoric in actual literary work.

## OLD TESTAMENT.

DR. CURTIS.

*Four hours a week for the Junior year, and two for the Middle year.*

I. HEBREW: The aim of this course is to give the student such a working knowledge of the language as will enable him sympathetically to study the religious life of the Hebrew people.

The first part of the year is devoted to the grammar and the vocabulary of the more common words, and to the reading of easy prose. As soon as possible some exegetical and critical work is added, in which an effort is made to ascertain the dates and contents of the first six books of the Old Testament.

A portion of the year is devoted to a brief survey of Jewish history and religion as reconstructed by the latest

authorities, chiefly with a view to acquaint the students with the questions at issue.

The method of work is largely inductive, and involves lectures, discussions, recitations, and occasional examinations.

The text-books used are Bissell's Practical Hebrew Grammar, the Hebrew Old Testament, and Toy's History of the Religion of Israel.

II. HEBREW SOCIOLOGY: This and the following courses are for the Middle Class. The first part of the year will be devoted to tracing the origin and development of social, political, and religious institutions from the rise of Judaism to its decay; and the latter part, to the study of the ideals of the leading Hebrew minds.

An attempt will also be made to connect this study with practical sociological questions of the present day. The method is substantially as above, and the text-book is the Revised Version of the Bible.

III. MESSIANIC PROPHECY: The purpose of this course is to trace the growth of the Messianic idea throughout the Old Testament. The "Messianic Texts" will be studied as to their origin and meaning, especially with relation to Jesus of Nazareth.

The Class will use Briggs's Messianic Prophecy, with references to Spurgeon, Cheyne, W. R. Smith, Hengstenberg, Kuenen, and Wellhausen.

IV. OLD TESTAMENT INTRODUCTION: During the latter part of the year Courses II. and III. will be combined, for the study of the various books of the Old Testament, with reference to authorship, dates, purpose, contents, and for tracing the development of Old Testament Theology.

References are made to works on Introduction, by Driver, Keil, Bleek, Wright, and others.

## NEW TESTAMENT.

PROFESSOR HARMON.

*Four hours a week for the Junior and Middle years, and two hours a week for two-thirds of the Senior year.*

I. CRITICISM: The origin, contents, and history of the New Testament writings; the History of the Canon during the first two centuries; and the historical and archæological problems involved.

The aim of this work is to make the student intelligent as to the leading questions in New Testament criticism and the various opinions thereon, and to form in him the habit of independent and sound critical judgment. The method pursued is to deal with these questions as they naturally arise in the work of Exegesis. Topics are assigned, and references given to leading authorities in the Library, which the student is to consult, making statements of the different opinions and the grounds given for the same, comparing them with each other and with such facts as are at command, and from such comparison drawing his own conclusions. This work is supplemented with notes from the professor, and written examinations are held at convenient intervals.

II. EXEGESIS: The Life of Christ from the Synoptic Gospels; the teaching of the Fourth Gospel; selected passages from Romans, and First Corinthians.

The aim is to develop the power of independent, scientific interpretation. The principles of Interpretation are given to the class in notes, and the students are required to apply them to the passages read. It is required that the class discover the main points to be interpreted, without recourse to commentaries, and deal with these points in accordance with right exegetical methods. Later in the course the class is taught the right use of commentaries.

III. NEW TESTAMENT THEOLOGY: The course covers the doctrines of Christ contained in the Synoptic Gospels, the Johannine theology, and the doctrinal system of Paul. The aim is to discover the main lines of thought stated and directly involved in the above, and the relations of these to each other. The results of the study appear in the interpretation of the New Testament writings as they are read by the class.

Reference is made to the following named authorities in the library: Schürer, Westcott, Weiss, Reuss, Edersheim, Ewald, Davidson, Abbott, Lardner, Fisher, Keim, DeWette, Meyer, Lange, Olshausen, Alford, Godet, Ellicott, Luthardt, Delitzsch, and Schmid.

## CHURCH HISTORY.

PROFESSOR KNIGHT.

*Four hours a week for the Junior year.*

The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. Also he is constantly instructed and inspired by the story of the great and good who have made the Church what it is. And in general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church and its Relations to the State; The Internal Organization; Intellectual Life and Doctrine; Moral Life; The Form and Substance

of Worship. In the latter part of the year special study is made of the chief religious sects in the United States; and lastly, of the History of Doubt.

The books used by the student are mostly contained in the library of the college, and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, — such as the works of Schaff, Fisher, Neander, Alzog, and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic, in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and professor. At the completion of each topic the results are organized, and a written review held; the papers of which are returned with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities. And, especially in history of doctrines, they prepare several pieces of original work during the year.

## COMPARATIVE THEOLOGY.

PROFESSOR KNIGHT.

*Three hours a week for the first third of the Senior year.*

The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellences and defects of many religions renders the student more able to reject the false, and more in-

clined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Elkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt, and Chaldea; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Laou-tsze, Zoroaster, and Mohammed.

The topics noted are: The Deity; the Forms and Meaning of Worship; The Condition of the People, — industrial, intellectual, and moral; and the Power of each Religion for the elevation and future perfection of the human race.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and professor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

## ETHICS.

PROFESSOR TOUSEY.

*Four hours a week for two thirds of the Middle year, and one hour a week for one third of the Senior year.*

Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedon-

ism, Utilitarianism, Intuitionalism, and Determinism, are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

The Seniors attend more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life, and in the moral guidance of others.

## NATURAL THEOLOGY.

PROFESSOR TOUSEY.

*Three hours a week for the Senior year.*

The various modes of the theistic argument are reviewed, their grounds scrutinized, and their logical value carefully discussed. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures, and parallel readings, — the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science; and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

## SYSTEMATIC THEOLOGY.

PROFESSOR KNIGHT.

*Four hours a week for the first term of the Middle year, and three for the second term.*

The purpose is to assist the student to think independently on theological subjects and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the sources of theological material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions: the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional subdivisions will be noted historically, but will be accepted only so far as they seem to rest on essential principles or the real relations of truth, which alone can be accepted in a scientific process.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results in a scientific product.

4. Illustrative applications of the result to practical problems, — ecclesiastical, political, social, and personal.

There is no available hand-book in this study. But constant reference is necessarily made to books used in the departments whose products are here co-ordinated; and of

the books special to this department, much use is made of the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material; he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

## HOMILETICS.

PROFESSOR LEONARD.

*Two hours a week during the Junior and the Middle years, and three during the Senior year.*

The course in Homiletics covers two-thirds of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and the structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and the range of illustration; the composition and the delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Helps in Sermon-Preparation, Modes of Development, Style in Spoken Discourse, The Invention and Arrangement of Material, Illustrations, use of Anecdote, Personality in Preaching, Character and Preaching.

Books are prescribed for reading. Original essays bearing on the subject, and written examinations are required.

## CHURCH POLITY.

PROFESSOR LEONARD.

*Four hours a week for one third of the Senior year.*

This course includes a study of the history and the government of the Apostolic Church; a comparison and contrast of the methods of special churches, — Prelatical, Presbyterian, Congregational, — with particular reference to the government and methods of the Universalist Church.

Books are prescribed for reading. Written examinations on all the work are required.

## PASTORAL THEOLOGY.

PROFESSOR LEONARD.

*Four hours a week for one third of the Senior year.*

The course provides for the discussion of pastoral qualifications, — spiritual, mental, social; for the study of the forms and the conduct of public worship; for practical illustration of pastoral oversight and visitation; for the study of the best methods of building and of uniting a parish; for the discussion of the theories of church-work in Sunday-schools, missions, charities; for the study of economic questions in their relations to the pastor's work; and for lectures and dictations upon the official duties of the Christian minister.

Frequent written examinations and original essays on the more important subjects are required.

From year to year the course in Pastoral Theology is supplemented with special lectures from clergymen who are engaged in the active work of the ministry.

## ORATORY.

PROFESSOR MAULSBY.

*One hour a week for two years.*

The object of the instruction in the department of Oratory is to gain a natural as well as reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the class exercises consist of actual practice in reading selected hymns and portions of the Scriptures, with the preaching, in the advanced division, of parts of sermons. The work done is followed by criticism and suggestion from the instructor and the class.

# General Information.

## RELIGIOUS EXERCISES.

Devotional services are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Y. P. C. U. holds regular meetings.

## EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed the students are required to pass a public written examination thereon.

## LIBRARIES AND LECTURES.

Students have free access to the general library of the College; also to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry, and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

## ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty.

### GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

### COURSES OF STUDY AND DEGREES.

THE FULL COURSE for Bachelors of Arts occupies three years; for all others, four years. Special courses occupy respectively one, two, and three years.

THE DEGREE OF BACHELOR OF DIVINITY is conferred upon college graduates who sustain satisfactorily an examination on the studies of the prescribed course, and upon others, who, in the judgment of the Faculty, have made equivalent attainments. Diplomas certifying to attainments are conferred upon those who have taken in a satisfactory manner the Four-Years Course.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

Opportunities for pursuing advanced studies are offered to graduates, and to others sufficiently qualified.

### ROOMS AND EXPENSES.

The rooms assigned to the Divinity students are in West Hall. Each study is provided with suitable furniture; and the bedroom adjoining is furnished with bedstead, bureau, and other furniture.

Tuition, room-rent, and use of furniture are free. The price of board is about three and one-half dollars per week. The necessary school expenses, including board, washing, fuel, light, and text-books, do not exceed two hundred dollars per year.

The General Convention of Universalists aids students by a system of loans; and those in the regular course who have shown sufficient maturity are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

### NEW BUILDINGS.

The new buildings, now in process of construction, for the special use of the Divinity School, will be ready for occupancy by the beginning of the College year 1892–93. Miner Hall, the gift of Ex-President Miner, will contain rooms for lectures and the use of the Faculty; while the new dormitory of thirty-six rooms will afford a separate apartment for each student.

### SCHOLARSHIPS, ETC.

THE GREENWOOD SCHOLARSHIP. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

For the year 1891 these prizes were awarded to WILLIAM BEST EDDY, HENRY REUBEN ROSE, and RALPH EVERETT CONNER.

THE DOCKSTADER SCHOLARSHIPS. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

THE WOODBRIDGE SCHOLARSHIP. — The income of two thousand dollars, given by Samuel F. Woodbridge, of Cambridge, Mass., is appropriated for the benefit of the Divinity School.

The income of the VANNEVAR FUND is used in the purchase of books for the Department of Homiletics.

Rev. W. S. Perkins, D. D., of Meriden, Conn., provides for an annual prize of twenty-five dollars, to encourage extemporaneous preaching.

# CATALOGUE

OF

# TUFTS COLLEGE

## 1892-93.

# CATALOGUE

OF

# TUFTS COLLEGE

1892-93

CAMBRIDGE
JOHN WILSON AND SON
University Press
1893

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# Calendar.

## 1892.

| | |
|---|---|
| Sept. 22. | College Year begins, Thursday morning. |
| Sept. 25. | Russell Lecture, Sunday 3 P. M. |
| Nov. 1. | Limit of time for applying for Scholarships. |
| Dec. 21. | Christmas Recess begins, Wednesday Evening. |

## 1893.

| | |
|---|---|
| Jan. 4. | Christmas Recess ends, Wednesday Evening. |
| Feb. 4. | Limit of time for reporting Electives. |
| Feb. 11. | First term ends, Saturday. |
| June 6. | Prize Reading in the Divinity School. |
| June 13. | Prize Reading in the College of Letters. |
| June 16. | Class Day, Friday. |
| June 18. | Baccalaureate Sermon, Sunday 3 P. M. |
| June 21. | Commencement, Wednesday. |
| June 22. | Examination for Admission begins, Thursday 9 A. M. |

Summer Vacation, Thirteen Weeks.

| | |
|---|---|
| Sept. 19. | Second Examination for Admission, Tuesday 9 A. M. |
| Sept. 20. | Examination for Admission to Divinity School. |
| Sept. 21. | College Year begins, Thursday morning. |
| Sept. 23. | Limit of time for reporting Electives. |
| Sept. 24. | Russell Lecture, Sunday 3 P. M. |

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Tufts College is situated at College Hill, four miles from Boston, on the Lowell division of the Boston and Maine Railroad. The Post Office Address is — Tufts College, Mass.

# Tufts College.

TUFTS COLLEGE owes its inception immediately to an effort, under the direction of the Rev. OTIS A. SKINNER of Boston, to raise one hundred thousand dollars for its foundation. About sixty thousand dollars was obtained in money; the subscription was completed by SYLVANUS PACKARD giving his bond for twenty thousand dollars, and by CHARLES TUFTS making a donation of twenty acres of land, embracing the present site of the College. The latter announced his intention to increase his gift of land to more than one hundred acres, and thus became the largest benefactor at the start. It was determined, therefore, that the institution should receive his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, the same being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were OLIVER DEAN, who gave it ninety thousand dollars, and THOMAS A. GODDARD, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. WILLIAM J. WALKER came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

The charter under which, with slight changes, the College has been developed, was granted April 21, 1852. Students were first formally admitted in 1855. The first class, consisting of three members, was graduated in 1857. At the outset provision was made only for a course of study leading to the degree of Bachelor of Arts; but some unclassified students were always in attendance. It seemed desirable, therefore, to lay out courses for those who had been prepared only in English subjects. In 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course covering two years. This course continued until 1875, when it was changed

to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, for which an entrance requirement, believed to be fully the equivalent of the Greek, is demanded in two modern languages. A department of Civil Engineering was also organized in 1869, and opportunity was offered for instruction in the branches pertaining to that subject. A course of study in Electrical Engineering was opened to students in 1883, and a professorship of the subject was established in 1890. The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. THOMAS J. SAWYER, D.D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1883 the late PHINEAS T. BARNUM gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The first President was the Rev. HOSEA BALLOU 2d, D.D., who held office from the opening of the College until his death in 1861. His successor, the Rev. ALONZO AMES MINER, D.D., LL.D., was inaugurated in 1862, and continued in office until his resignation in February, 1875. The present incumbent was chosen in March of the same year.

# The College Charter.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-president, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age, or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the trustees to convene at such meetings, and also, from time to time to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the constitution and laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one-third, at least, of the trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed, and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College, in such manner as shall most effectually promote virtue and piety, and learning in such of the languages, and of the liberal and useful arts, and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government, that pecuniary aid shall hereafter be granted to the College.

# Trustees.

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*Instructor in History.*

LEO R. LEWIS, A.M.
*Instructor in French.*

FRANK T. DANIELS, A.M.B.
*Instructor in Civil Engineering.*

## Non-Resident Lecturers.

ALFRED P. PUTNAM, D.D.
*Lecturer on the History of Bible Lands.*

HENRY I. CUSHMAN, D.D.
*Lecturer on Methods of Biblical Study.*

DAVID G. LYON, PH.D.
*Lecturer on the Assyrian Monuments and the Old Testament.*

GILBERT HODGES, C.E.
*Lecturer on Economics of Street Railways.*

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HELEN L. MELLEN,
*Librarian.*

GEORGE A. ARNOLD, PH.B.
*Assistant in the Library.*

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LEO R. LEWIS, A.M.
FRANK T. DANIELS, A.M.B.

# Undergraduates.

## CLASSICAL AND PHILOSOPHICAL COURSES.

### Senior Class.

| | | |
|---|---|---|
| Arnold, Louis Wales | *Braintree* | East Hall, 18. |
| DeGoosh, Arthur Winfield | *Bradford, Vt.* | Dean Hall, 6. |
| Groce, Joseph Byron | *Roxbury* | Dean Hall, 12. |
| Kipp, Charles Goodhue | *New York, N. Y.* | 20 Professors Row. |
| Martin, Willard Shepard | *Plainfield, Vt.* | Dean Hall, 6. |
| Spaulding, Harris Waldemar | *Haverhill* | Dean Hall, 11. |
| Thompson, Alfred Percival | *Middleboro* | West Hall, 7. |
| Watson, Frederick Cushman | *Auburn, Me.* | West Hall, 9. |
| Brown, Henrietta Noble | *College Hill* | 38 Professors Row. |

### Junior Class.

| | | |
|---|---|---|
| Benton, Herbert Elmon | *Annisquam* | West Hall, 11. |
| Eastwood, James Stewart | *West Brattleboro, Vt.* | East Hall, 31. |
| Goodrich, William Henry | *Fitchburg* | Dean Hall, 5. |
| Hicks, Blanchard Fossett | *Rockland, Me.* | West Hall, 14. |
| Hodgdon, Fred Crosby | *Waltham* | East Hall, 16. |
| Leighton, Virgil Louis | *West Falmouth, Me.* | West Hall, 11. |
| Small, Willard Stanton | *Provincetown* | West Hall, 4. |
| Snow, Charles Joseph | *Haverhill* | Dean Hall, 11. |
| Stroud, Charles Crawford | *Grosvenordale* | 154 Boston Ave. |
| Wade, Charles St. Clair | *West Somerville* | East Hall, 16. |
| Walker, Fred Storer | *Westbrook, Me.* | West Hall, 17. |
| Webster, Fred Henry | *Haverhill* | West Hall, 3. |
| Whittemore, Thomas | *Cambridge* | Dean Hall, 12. |
| Wren, Frank George | *Roslindale* | East Hall, 30. |

### Sophomore Class.

| | | |
|---|---|---|
| Averell, Eugene | *Lynn* | Dean Hall, 1. |
| Barney, Charles Neal | *Lynn* | West Hall, 22. |
| Chessmore, Frank Harding | *Jonesville, Vt.* | West Hall, 12. |
| Clark, Charles Dow | *St. Albans, Vt.* | West Hall, 7. |
| Clarke, Edward Perkins | *Mystic, Conn.* | Mid. Hall, 11. |

| | | |
|---|---|---|
| Craig, Edward Channing | *Franklin* | West Hall, 9. |
| Dunham, William Roger | *Barre, Vt.* | West Hall, 12. |
| Eaton, Clarence Livingstone | *Weymouth* | West Hall, 2. |
| Emery, William Gordon | *Bridgeport, Conn.* | West Hall, 10. |
| Fobes, Harold Bartlett | *Portland, Me.* | West Hall, 6. |
| Folsom, Harry Charles | *Oakland, Me.* | West Hall, 6. |
| Frank, Henry Pennell | *Portland, Me.* | Dean Hall, 5. |
| George, Bert Dutton | *East Calais, Vt.* | West Hall, 13. |
| Godfrey, William Hollis | *Lynn* | Dean Hall, 1. |
| Ireland, George Preston | *Springfield* | West Hall, 16. |
| King, Charles Guy | *Mattapan* | East Hall, 28. |
| Larrabee, Frank Philip | *Portland, Me.* | West Hall, 1. |
| Lynde, Frank Martin | *Williamstown, Vt.* | West Hall, 13. |
| Nason, Daniel White | *Bangor, Me.* | 102 Curtis St. |
| Ricketts, Charles Lucius | *Monson* | West Hall, 22. |
| Saunders, Joseph Henry | *Everett* | Dean Hall, 3. |
| Sheldon, James Fitts | *Haverhill* | West Hall, 8. |
| Small, William Morton | *Baldwinville* | West Hall, 12. |
| Smith, Robert Baxter | *No. Tunbridge, Vt.* | East Hall, 18. |
| Thompson, Fred Everett | *Bangor, Me.* | West Hall, 1. |
| Whitehorne, William Risby | *W. Somerville* | Mid. Hall, 11. |
| Winslow, Guy Monroe | *W. Somerville* | Mid. Hall, 8. |

**Freshman Class.**

| | | |
|---|---|---|
| Austin, Philip Anthony | *Barre, Vt.* | Mid. Hall, 12. |
| Barnard, Percival Gates | *Lowell* | West Hall, 31. |
| Belcher, Walter Hermon | *W. Medford* | Mid. Hall, 8. |
| Cheever, Ralph Holbrook | *Portsmouth, N. H.* | Mid. Hall, 10. |
| Congdon, Joseph | *Clarendon, Vt.* | East Hall, 8. |
| Corridan, Eugene Francis | *Weymouth* | West Hall, 32. |
| Dillon, David Francis | *Palmer* | West Hall, 29. |
| Fickett, Edward Wyman | *Spencer* | East Hall, 25. |
| French, Allen Evander | *Waltham* | Dean Hall, 3. |
| Hall, Clifford Foster | *Nashua, N. H.* | West Hall, 16½. |
| Holbrook, Henry William | *Palmer* | West Hall, 29. |
| Johnson, Sidney Breed | *Lynn* | East Hall, 25. |
| Jordan, Charles Gilbert | *E. Braintree* | West Hall, 28. |
| Knowlton, John Wellington | *New Bedford* | East Hall, 22. |
| Lewis, Orlando Faulkland | *S. Boston* | East Hall, 28. |
| Lincoln, Joseph Gardner | *Furnace* | East Hall, 11. |
| Lowell, Charles Sumner | *Rockland* | East Hall, 30. |
| Maguire, George Francis | *Rockland* | East Hall, 19. |

| | | |
|---|---|---|
| Marvin, Reignold Kent | *Roxbury* | West Hall, 25. |
| McLaine, William Ernest | *Haverhill* | East Hall, 31. |
| Morse, Curtis Gay | *West Somerville* | West Hall, 20. |
| O'Neil, William Roe | *Attleboro* | East Hall, 10. |
| Page, Cecil Alonzo | *Lowell* | East Hall, 23. |
| Sampson, Edwin Russell | *N. Weymouth* | West Hall, 32. |
| Smith, Orren Henry | *Williamstown, Vt.* | West Hall, 27. |
| Stover, Josiah Albert | *Kittery, Me.* | West Hall, 15. |
| Whitaker, Henry Charles | *Richmond, Vt.* | West Hall, 27. |
| Bailey, Mabel Prescott | *Methuen* | 36 Lawrence St., Methuen. |
| Hayes, Ethel Munroe | *Somerville* | 252 Medford St. |
| Hill, Blanche Harwood | *Medford* | Main St. |
| Meacom, Gertrude Holbrooke | *Chelsea* | 278 Chestnut St., Chelsea. |

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| | | |
|---|---|---|
| Hayward, Daniel Baxter | *E. Braintree* | West Hall, 28. |

## ENGINEERING COURSES.

### Senior Class.

| | | |
|---|---|---|
| Bates, George Moulton | *Waltham* | Dean Hall, 2. |
| Chase, Harry Gray | *West Newbury* | Dean Hall, 2. |
| Gow, Charles Rice | *Medford* | Dean Hall, 13. |
| Johnston, Chesley Metcalf | *Bangor, Me.* | Dean Hall, 14. |
| Neal, John Alden | *Wiscasset, Me.* | West Hall, 2. |
| Peakes, Henry Allen | *Moore's Mills, N.B.* | Dean Hall, 14. |
| Robinson, Harry Orman | *Bangor, Me* | Dean Hall, 13. |
| Russ, Wilfred Wesley | *Haverhill* | Dean Hall, 7. |
| Shaw, Stillman | *Woburn* | West Hall, 7. |
| Smith, Phil Sheridan | *No. Tunbridge, Vt.* | Mid. Hall, 7. |
| Strong, George Edward | *Gloucester* | Dean Hall, 14. |
| Weston, Howard Hanchett | *Somerville* | East Hall, 16. |

### Junior Class.

| | | |
|---|---|---|
| Aldrich, Frank Lawson | *Thompson, Conn.* | Dean Hall, 10. |
| Byrne, Edward Patrick | *Medford* | 15 Stearns Ave. |
| Cushman, Ara, Jr. | *Auburn, Me.* | Dean Hall, 7. |
| Dresser, Walter Prescott | *Fitchburg* | West Hall, 3 |
| Hathaway, Carl Voltaire | *South Cabot, Vt.* | West Hall, 14. |
| Hersey, Isaac Burrill | *Hingham* | West Hall, 19. |

| | | |
|---|---|---|
| Homer, George Gray | *Arlington* | West Hall 19. |
| Lane, Arthur Kempton | *Boston* | Dean Hall, 8. |
| Livermore, Harry Brigham | *Brighton* | West Hall, 20. |
| McDavitt, John Olin | *Lawrence* | East Hall, 13. |
| Mallett, John Purington | *Topsham, Me* | East Hall, 9. |
| Morrison, Adelbert Harland | *Lawrence* | East Hall, 13. |
| Morse, Robert Henry | *West Somerville* | West Hall, 20. |
| Pember, Frederick Howard | *Peabody* | East Hall, 9. |
| Read, Rufus Curtis | *Attleborough* | West Hall, 23. |
| Spalding, Samuel Albert | *Danvers* | West Hall, 4. |
| Walkley, James Arthur | *Brighton* | Cor. Leicester and Surrey Sts., Brighton. |
| Whitney, Orville Jophanus | *Medford* | East Hall, 13. |
| Wills, Albert Potter | *Waltham* | West Hall, 26. |
| Wilson, Pearley Ruel | *Solon, Me.* | East Hall, 19. |
| Wright, Edwin Hanscom | *Charlestown* | West Hall, 26. |

**Sophomore Class.**

| | | |
|---|---|---|
| Clement, Sumner | *Newton Centre* | West Hall, 10. |
| Cropley, Eugene Irving | *Marblehead* | Dean Hall, 8. |
| Foss, Hubert Collamore | *Bangor, Me.* | Dean Hall, 10. |
| George, Arthur Lincoln | *Lebanon, N. H.* | Dean Hall, 9. |
| McKenzie, Archibald | *Woodstock, Vt.* | West Hall, 8. |
| Page, Charles Harrison | *Lowell* | East Hall, 11. |

**Freshman Class.**

| | | |
|---|---|---|
| Bolles, Robert Henry | *Marion* | East Hall, 22. |
| Brainard, John Clarence | *Gloucester* | West Hall, 30. |
| Brothers, George Arthur | *Lowell* | West Hall, 26. |
| Clayton, Osro Randall | *Weston, Vt.* | East Hall, 15. |
| Hicks, Frank Files | *W. Somerville* | East Hall, 26. |
| Hill, Herbert Jasper | *Somerville* | West Hall, 21. |
| Ives, John Nash | *Roxbury* | East Hall, 31. |
| Keene, Frank William | *Lynn* | West Hall, 24. |
| Merrill, Meldon Humphrey | *Yarmouth, Me.* | West Hall, 15. |
| Merritt, Henry Dresser | *N. Attleboro* | Dean Hall, 4. |
| Ohata, Konosuke | *Ibaraki-Ken, Japan* | Mid. Hall, 5. |
| O'Regan, Charles Sumner | *Bondsville* | West Hall, 16. |
| Perry, Leslie Lawrence | *Rutland, Vt.* | East Hall, 8. |
| Pierce, Guy Clifford | *Lowell* | West Hall, 25. |
| Pindar, Ralph Waldo | *Lowell* | East Hall, 23. |
| Sabine, Edward Dana | *Malden* | Dean Hall, 4. |

| | | |
|---|---|---|
| Smith, Warner Daniel . . | *Marshfield, Vt.* . . | Mid. Hall, 12. |
| Symonds, Herbert Washburn | *Hancock, N. H.* . . | East Hall, 15. |
| Taylor, William Gavin . . | *Medford* . . . . | East Hall, 26. |
| Thurston, Arthur . . . . | *Haverhill* . . . . | West Hall, 31. |
| Whiton, Charles Edward . | *Greenwood* . . . | Mid. Hall, 10. |
| Woodbury, John Clifford . | *Woodstock, Vt.* . . | West Hall, 30. |

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| | | |
|---|---|---|
| Chaffee, Harry Smith . . . | *Rochester, Vt.* . . | East Hall, 6. |
| Chick, Walter Everett . . | *Medford* . . . . | East Hall, 26. |
| Haynes, Charles Irving . . | *Bangor, Me.* . . . | Dean Hall, 13. |

### SPECIAL STUDENTS.

| | | |
|---|---|---|
| Hooper, Arthur Kelly . . | *Manchester* . . . | Dean Hall, 9. |
| Lambert, Fred Dayton . . | *Muscatine, Ia.* . . | 154 Boston Ave. |
| Rayon, Thomas Francis . . | *College Hill* . . . | Mid. Hall, 7. |
| Frazeur, Laurie . . . . | *Chicago, Ill.* . . . | 42 Kirkland Street, Cambridge. |

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## SUMMARY.

| | |
|---|---|
| GRADUATES | 10 |
| CLASSICAL AND PHILOSOPHICAL COURSES. | |
| Seniors | 9 |
| Juniors | 14 |
| Sophomores | 27 |
| Freshmen | 32 |
| | — 82 |
| ENGINEERING COURSES. | |
| Seniors | 12 |
| Juniors | 21 |
| Sophomores | 6 |
| Freshmen | 25 |
| | — 64 |
| SPECIAL STUDENTS | 4 |
| TOTAL IN COLLEGE OF LETTERS | 160 |
| TOTAL IN DIVINITY SCHOOL | 44 |
| | 204 |

# Requirements for Admission.

Candidates for admission to the Freshman Class will be examined upon the following studies: —

## CLASSICAL COURSES.

Candidates for the Classical Courses may satisfy the requirements of admission in two different ways, according as they do, or do not, present Greek. The requirements for candidates entering with Greek are given under Course I, and for those without Greek, under Course II.

### Course I.

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. CÆSAR. — Gallic War, Books I–IV.

3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. VIRGIL. — Aeneid, Books I–VI.

5. OVID. — Metamorphoses, 2500 lines.

6. LATIN COMPOSITION. — Harkness's Latin Composition to Part III, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

7. GREEK GRAMMAR. — Hadley's, Crosby's, Curtius's, or Goodwin's Greek Grammar, including Prosody.

8. XENOPHON. — Anabasis, four books.

9. HOMER. — Iliad, three books.

10. GREEK COMPOSITION. — The translation of simple English prose into Greek.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

11 *a*. ELEMENTARY GERMAN.

(1) Proficiency in elementary grammar, implying, especially, familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak, and of the more usual strong verbs; the more common prepositions; the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.]

(2) Ability to translate a passage of simple prose at sight, a vocabulary of the less-used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose, with a few lyric poems.]

(3) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.]

ALTERNATIVE.

11 *b*. ELEMENTARY FRENCH.

(1) Proficiency in elementary grammar, implying, especially, familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives;" the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under Elementary German, § 1.]

(2) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(3) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German, § 3.]

# Requirements for Admission.

Candidates for admission to the Freshman Class will be examined upon the following studies: —

## CLASSICAL COURSES.

Candidates for the Classical Courses may satisfy the requirements of admission in two different ways, according as they do, or do not, present Greek. The requirements for candidates entering with Greek are given under Course I, and for those without Greek, under Course II.

### Course I.

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. CÆSAR. — Gallic War, Books I–IV.

3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. VIRGIL. — Aeneid, Books I–VI.

5. OVID. — Metamorphoses, 2500 lines.

6. LATIN COMPOSITION. — Harkness's Latin Composition to Part III, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

7. GREEK GRAMMAR. — Hadley's, Crosby's, Curtius's, or Goodwin's Greek Grammar, including Prosody.

8. XENOPHON. — Anabasis, four books.

9. HOMER. — Iliad, three books.

10. GREEK COMPOSITION. — The translation of simple English prose into Greek.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

11 *a*. ELEMENTARY GERMAN.

(1) Proficiency in elementary grammar, implying, especially, familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak, and of the more usual strong verbs; the more common prepositions; the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.]

(2) Ability to translate a passage of simple prose at sight, a vocabulary of the less-used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose, with a few lyric poems.]

(3) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.]

ALTERNATIVE.

11 *b*. ELEMENTARY FRENCH.

(1) Proficiency in elementary grammar, implying, especially, familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives;" the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under Elementary German, § 1.]

(2) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(3) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German, § 3.]

12. ARITHMETIC, including the Metric System.

13. ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

14. PLANE GEOMETRY.

15. ANCIENT GEOGRAPHY AND HISTORY. — Outlines of ancient geography; Smith's Smaller History of Greece, to the death of Alexander; Allen's History of Rome.

16. ENGLISH GRAMMAR AND COMPOSITION. — Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1893. — Shakspeare's Julius Cæsar and Twelfth Night; Scott's Marmion; Longfellow's Courtship of Miles Standish; The Sir Roger de Coverley Papers in the Spectator; Macaulay's second Essay on the Earl of Chatham; Emerson's American Scholar; Irving's Sketch Book; Scott's Ivanhoe.

For 1894. — Shakspeare's Julius Cæsar and Merchant of Venice; Scott's Lady of the Lake; Arnold's Sohrab and Rustum; The Sir Roger de Coverley Papers in the Spectator; Macaulay's second Essay on the Earl of Chatham; Emerson's American Scholar; Irving's Sketch Book; Scott's Abbot; Dickens's David Copperfield.

For 1895. — Shakspeare's Merchant of Venice and Twelfth Night; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; the Sir Roger de Coverley Papers in the Spectator; Macaulay's Essays on Milton and Addison; Webster's First Bunker Hill Oration; Irving's Sketch Book; Scott's Abbot.

### Course II.

LATIN. — Requirements 1, 2, 3, 4, 5, 6, page 20.

In place of the requirements in Greek (7, 8, 9, and 10), the following requirement is substituted: —

ADVANCED GERMAN.

(1) Proficiency in more advanced grammar. In addition to a thorough knowledge of accidence (including the elements of word-formation), and of the principal values of prepositions and conjunctions, the candidate must be familiar with the essentials of German syntax, particularly that of the modal auxiliaries and the subjunctive and infinitive modes.

(2) Ability to translate ordinary German, to be acquired by the reading, in addition to the elementary requirement, of the following works: Der Fluch der Schönheit (Riehl); Aus dem Staat Friedrichs des Grossen (Freytag); Die Harzreise (Heine); the first three books of Dichtung und Wahrheit (Goethe); Minna von Barnhelm (Lessing); Wilhelm Tell and Das Lied von der Glocke (Schiller); and thirty pages of lyrics or ballads.

(3) Ability to write in German a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[While, at the examination, matters of very subordinate interest or of minor detail will not be set as subjects for composition, it is hoped that teachers may be led by this requirement to stimulate from the beginning the pupil's interest in the subject-matter of the works read in preparation.]

ALTERNATIVE.

ADVANCED FRENCH.

(1) Proficiency in more advanced grammar. In addition to a knowledge of the accidence, and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, especially the use of modes and tenses, and with the more frequently recurring idiomatic phrases.

(2) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including Le siège de Berlin and La dernière classe (Daudet); Colomba (Mérimée); Mademoiselle de la Seiglière, the play (Sandeau); Jeanne Darc (Henri Martin); and one play each of Corneille, Racine, and Molière.

(3) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German, § 3.]

ELEMENTARY FRENCH OR GERMAN. — Candidates presenting Advanced German must also present Elementary French (Requirement, § 11 *b*, page 21); and those presenting Advanced French must also present Elementary German (Requirement 11 *a*, page 21).

ARITHMETIC. — Requirement 12, page 22.

ALGEBRA — Requirement 13, page 22.

PLANE GEOMETRY. — Requirement 14, page 22.

ANCIENT HISTORY AND GEOGRAPHY. — Requirement 15, page 22.

ENGLISH GRAMMAR AND COMPOSITION. — Requirement 16, page 22.

## PHILOSOPHICAL COURSE.

Candidates for admission to the Philosophical Course will be examined in all the subjects that are required for Course II of the Classical Course (pages 22, 23), excepting Advanced German or French, for which the following will be substituted: —

INTERMEDIATE GERMAN.

(1) The candidate must give evidence of a thorough knowledge of the elementary grammar (see page 21), and of the use of modes and tenses.

(2) He must have translated the equivalent of four hundred pages of German, including Wilhelm Tell (Schiller), and twenty pages of lyric ballads.

(3) He must be able to pronounce German, and to render simple English sentences into that language.

ALTERNATIVE.

INTERMEDIATE FRENCH.

(1) and (3) as above.

(2) He must have translated the equivalent of five hundred pages of French, including the plays Mademoiselle de la Seiglière (Sandeau) and Athalie (Racine).

ELEMENTARY GERMAN OR FRENCH.

In addition to the above German or French, the elementary examination in the alternate modern language is also required. (Requirements 11 *a*, 11 *b*, page 21.)

## ENGINEERING COURSES.

Candidates for the Engineering Courses will be examined in the following studies: —

1. ARITHMETIC. (See Requirement 12, page 22.)
2. ALGEBRA. (See Requirement 13, page 22.)
3. PLANE GEOMETRY.
4. SOLID GEOMETRY.
5. GERMAN OR FRENCH. (See Requirements 11 *a*, 11 *b*, page 21.)
6. ENGLISH GRAMMAR AND COMPOSITION. (See Requirement 16, page 22.)

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The regular examination for admission will begin on the day after Commencement, and continue through the following day. A second examination will also be held on the Tuesday and Wednesday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M. on each of these days.

At the regular examination in June, those who will be candidates for admission to the Freshman Class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than nine of the sixteen subjects enumerated in the preceding pages, and may receive certificates if they pass in not less than seven. English may be presented at the final examination only.

For admission to an advanced class, an examination must be well sustained both in the preparatory studies and in the studies through which such class has passed. To be admitted to advanced standing, one must also pay half the tuition of the previous portion of the course, unless he comes from another college ; provided, that if he be admitted at the beginning of the Senior year, the tuition of the Junior year shall be the only arrears required of him.

While under certain conditions the certificates of teachers in good standing are accepted in lieu of an examination, this method of admission is regarded with disfavor. Candidates so admitted will be considered as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate. To be received, the certificate (blank forms of which will be sent on application to the Secretary of the Faculty) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requirements, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course.

## TABULAR VIEW OF PRESCRIBED

| | | Freshman Year. | | Sophomore Year. | |
|---|---|---|---|---|---|
| | | First Term | Second Term. | First Term. | Second Term. |
| Classical Courses. | A. B. Course I. | Latin 1.<br>Greek 2.<br>French 1 (or German 1).<br>Mathematics 1.<br>English 1. | Latin 1.<br>Greek 2.<br>French 1 (or German 1).<br>Mathematics 1.<br>English 1. | Latin 2.<br>Greek 3.<br>German 1 (or French 1).<br>Mathematics 2.<br>English 2.<br>Oratory 1. | History 1.<br>Physics 1.<br>Biology 1.<br>Oratory 1.<br>Elective (6 hrs.). |
| | A. B. Course II., A. | Latin 1.<br>German 3 (or Greek 1).<br>French 1.<br>Mathematics 1.<br>English 1. | Latin 1.<br>German 3 (or Greek 1).<br>French 1.<br>Mathematics 1.<br>English 1. | Latin 2.<br>German 4 (or Greek 2).<br>French 2.<br>Mathematics 2.<br>English 2.<br>Oratory 1. | History 1.<br>Physics 1.<br>Biology 1.<br>Oratory 1.<br>Elective (6 hrs.). |
| | A. B. Course II., B. | Latin 1.<br>French 3 (or Greek 1).<br>German 1.<br>Mathematics 1.<br>English 1. | Latin 1.<br>French 3 (or Greek 1).<br>German 1.<br>Mathematics 1.<br>English 1. | Latin 2.<br>French 4 (or Greek 2).<br>German 2.<br>Mathematics 2.<br>English 2.<br>Oratory 1. | History 1.<br>Physics 1.<br>Biology 1.<br>Oratory 1.<br>Elective (6 hrs.). |

## STUDIES IN ALL COURSES.

| | | Junior Year. | | Senior Year. | |
|---|---|---|---|---|---|
| | | First Term. | Second Term. | First Term. | Second Term. |
| Classical Courses. | A. B. Course I. | Physics 2.<br>Chemistry 1.<br>English 3.<br>Elective (9 hrs.). | Physics 2.<br>Philosophy 1.<br>English 3.<br>Elective (9 hrs.). | Philosophy 2.<br>Philosophy 3.<br>Elective (9 hrs.). | Polit. Economy.<br>Elective (9 hrs.). |
| | A. B. Course II., A. | Physics 2.<br>Chemistry 1.<br>English 3.<br>Elective (9 hrs.). | Physics 2.<br>Philosophy 1.<br>English 3.<br>Elective (9 hrs.). | Philosophy 2.<br>Philosophy 3.<br>Elective (9 hrs.). | Polit. Economy.<br>Elective (9 hrs.). |
| | A. B. Course II., B. | Physics 2.<br>Chemistry 1.<br>English 3.<br>Elective (9 hrs.). | Physics 2.<br>Philosophy 1.<br>English 3.<br>Elective (9 hrs.). | Philosophy 2.<br>Philosophy 3.<br>Elective (9 hrs.). | Polit. Economy.<br>Elective (9 hrs.). |

| | | Freshman Year. | | Sophomore Year. | |
|---|---|---|---|---|---|
| | | First Term. | Second Term. | First Term. | Second Term. |
| Philosophical Courses. | Ph. B. Course A. | Latin 1.<br>German 2.<br>French 1.<br>Mathematics 1.<br>English 1. | Latin 1.<br>German 2.<br>French 1.<br>Mathematics 1.<br>English 1. | Latin 2.<br>German 3.<br>French 2.<br>Mathematics 2.<br>English 2.<br>Oratory 1. | History 1.<br>Physics 1.<br>Biology 1.<br>Oratory 1.<br>Elective (6 hrs.). |
| | Ph. B. Course B. | Latin 1.<br>French 2.<br>German 1.<br>Mathematics 1.<br>English 1. | Latin 1.<br>French 2.<br>German 1.<br>Mathematics 1.<br>English 1. | Latin 2.<br>French 3.<br>German 2.<br>Mathematics 2.<br>English 2.<br>Oratory 1. | History 1.<br>Physics 1.<br>Biology 1.<br>Oratory 1.<br>Elective (6 hrs.). |
| Engineering Courses. | B. E. E. Electrical. | Mathematics.<br>Mechan. Drawing.<br>Freehand Draw'g.<br>Shop Work.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Descriptive Geom.<br>Mechan. Drawing.<br>Physics.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Physics.<br>Elements of Mechanism.<br>Drawing.<br>German (or French). | Mathematics.<br>Physics.<br>Physical Lab'y.<br>Shop Work.<br>Drawing.<br>German (or French). |
| | B. C. E. Civil. | Mathematics.<br>Mechan. Drawing.<br>Freehand Draw'g.<br>Shop Work.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Descriptive Geom.<br>Mechan. Drawing.<br>Physics.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Physics.<br>Surveying.<br>Field Work.<br>Drawing.<br>Elective (English).<br>German (or French). | Mathematics.<br>Physics.<br>Mathemat. Astr.<br>Shop Work.<br>Surveying.<br>Field Work.<br>Drawing.<br>German (or French). |

| | | Junior Year. | | Senior Year. | |
|---|---|---|---|---|---|
| | | First Term. | Second Term. | First Term. | Second Term. |
| Philosophical Courses. | Ph. B. Course A. | Physics 2.<br>Chemistry 1.<br>English 3.<br>Elective (9 hrs.). | Physics 2.<br>Philosophy 1.<br>English 3.<br>Elective (9 hrs.). | Philosophy 2.<br>Philosophy 3.<br>Elective (9 hrs.). | Polit. Economy.<br>Elective (9 hrs.). |
| | Ph. B. Course B. | Physics 2.<br>Chemistry 1.<br>English 3.<br>Elective (9 hrs.). | Physics 2.<br>Philosophy 1.<br>English 3.<br>Elective (9 hrs.). | Philosophy 2.<br>Philosophy 3.<br>Elective (9 hrs.). | Polit. Economy.<br>Elective (9 hrs.). |
| Engineering Courses. | B. E. E. Electrical. | Mathematics.<br>Mechanics.<br>Chemistry.<br>Electricity.<br>Physical Lab'y.<br>Drawing.<br>Shop Work. | Mathematics.<br>Mechanics.<br>Steam Engineer'g.<br>Electricity.<br>Physical Lab'y.<br>Drawing. | Mathematics.<br>Kinematics of Machines.<br>Electricity.<br>Electrical Lab'y.<br>Drawing.<br>English Comp. | Polit. Economy.<br>Electricity.<br>Electrical Lab'y.<br>Technical Applications of Electricity.<br>English Comp.<br>Thesis. |
| | B. C. E. Civil. | Mathematics.<br>Mechanics.<br>Chemistry.<br>Field Work.<br>Drawing.<br>Electricity (or Geology). | Mathematics.<br>Mechanics.<br>Steam Engineer'g.<br>Drawing.<br>Electricity (or Chemistry). | Mathematics.<br>Civil Engineer'g.<br>Road Engineer'g.<br>Field Work.<br>Drawing.<br>Electricity (or Chem.).<br>English Comp. | Polit. Economy.<br>Civil Engineer'g.<br>Road Engineer'g.<br>Drawing.<br>Electricity (or Chem.).<br>English Comp.<br>Thesis. |

# Courses of Study.

## CLASSICAL COURSES.

Two courses of study lead to the degree of Bachelor of Arts.

COURSE I, for candidates who enter with Greek, corresponds to that which is offered by New England colleges.

COURSE II, offered in 1892–93 for the first time, has been arranged especially to meet the needs of graduates from the best English high schools, and is intended for those who present, instead of preparatory Greek, an advanced and equivalent attainment in either French or German, in addition to the elementary requirement in the alternate modern language. (See pages 22, 23.)

COURSE II offers opportunity either to continue, for a possible period of three years, the study of that modern language in which the advanced requirements for admission have been met, or to take up the study of Elementary Greek, with the prospect of covering by the end of the Junior year both the Greek of the preparatory school and that required in Course I. In Course II the modern language in which the elementary examination has been taken is a required study for two years, and may be elected through the entire course.

Elective privileges in both courses begin at the middle of the Sophomore year. Excepting in Greek, French, and German, the required work of the two courses is identical.

### COURSE I.

#### FRESHMAN YEAR.

##### First Term.

**Latin 1.** — Livy; Cicero, De Senectute; Latin Composition; Roman History and Antiquities, with Illustrated Lectures. *Five hours a week.*

PROFESSOR DEARBORN.

**Greek 2.** — Xenophon, Memorabilia or Cyropædia; Herodotus, Book VI; Lectures on Attic and Ionic Dialects, and on Grecian History; Greek Prose Composition, Allinson. *Four hours a week.*

ASST. PROFESSOR GRAVES.

OPTION. — Reading in the Iliad. *Two hours a week.*
ASST. PROFESSOR GRAVES.

or,

Greek History, Smith's Larger History; Grote; Curtius. *Two hours a week.* ASST. PROFESSOR GRAVES.

**French 1** (if entering with French). — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

**German 1** (if entering with German). — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

**Mathematics 1.** — Taylor's College Algebra; Byerly's Chauvenet's Solid and Spherical Geometry. *Four hours a week.* PROFESSOR BROWN.

**English 1.** — English Composition. *One hour a week.*
PROFESSOR SHIPMAN.

### Second Term.

**Latin 1.** — Cicero, De Senectute, continued; Horace, Satires and Epistles; Latin Composition; Roman History and Antiquities; Lectures on the History of the Latin Language and Literature. *Five hours a week.* PROFESSOR DEARBORN.

**Greek 2.** — Thucydides, parts of Books VI and VII; Homer, Odyssey (Phæacian Episode); Lectures on Old Attic and Epic Dialects; Greek Prose Composition in the style of Xenophon. *Four hours a week.*
ASST. PROFESSOR GRAVES.

OPTION. — Reading in the Iliad. *One hour a week.*
ASST. PROFESSOR GRAVES.

or,

Greek History, Smith's Larger History; Grote; Curtius. *One hour a week.* ASST. PROFESSOR GRAVES.

**French 1** (if entering with French). — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* MR. LEWIS.

**German 1** (if entering with German). — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.* PROFESSOR FAY.

**Mathematics 1.** — Byerly's Chauvenet's Solid and Spherical Geometry, continued; Wentworth's Trigonometry. *Four hours a week.*
PROFESSOR BROWN.

**English 1.** — English Composition. *One hour a week.*
PROFESSOR SHIPMAN.

## SOPHOMORE YEAR.

### First Term.

**Latin 2.** — Horace, Odes and Epodes; Cicero, De Amicitia; Latin Composition. *Three hours a week.* PROFESSOR DEARBORN.

**Greek 3.** — Ten Attic Orators, with Jebb's Attic Orators as Commentary; Goodwin's Greek Moods and Tenses, Lectures on Attic Law and Greek Life. *Three hours a week.* ASST. PROFESSOR GRAVES.

Optional reading in Euripides. *One hour a week.* ASST. PROFESSOR GRAVES.

**German 1** (if entering with French). — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

**French 1** (if entering with German). — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

**English 2.** — Rhetoric, Genung's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

**Mathematics 2.** — Spherical Trigonometry; Applications of Trigonometry; Hardy's Analytic Geometry. *Four hours a week.* PROFESSOR BROWN.

**Oratory 1.** — Practice in Reading Standard Selections; Vocal Exercises. *One hour a week.* PROFESSOR MAULSBY.

### Second Term.

**History 1.** — The Middle Ages, from the Barbarian Invasions to the Fall of Constantinople. Lectures and Recitations. *Three hours a week.* MR. START.

**Physics 1.** — Mechanics, Daniell's Principles. *Three hours a week.* PROFESSOR HOOPER.

**Biology 1.** — Human Anatomy and Physiology. Lectures and Laboratory Work. *Three hours a week.* PROFESSOR KINGSLEY.

**Oratory 1.** — Practice in Reading, continued; Gestures, with Class Exercises; Individual Preparation of Special Selections. *One hour a week.* PROFESSOR MAULSBY.

**Elective.** — Six hours a week from the following elective studies (see page 38): Latin 3; Greek 4; English 4, 7; French 1 (German 1) continued (see page 39); Mathematics 3, 6; Engineering 1. (For regulations regarding choice of electives, see page 78.)

## JUNIOR YEAR.

### First Term.

**Physics 2.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry 1.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.*
PROFESSOR COMEY and MR. DURKEE.

**English 3.** — Themes. PROFESSOR SHIPMAN.

**Elective.** — Nine hours a week in the following elective studies: Latin 4; Greek 5; English 8, 13; French 2; German 2; History 2, 5; Mathematics 4; Engineering 3, 4, 6, 7, 8; Physics 3; Biology 2, 5; Oratory 2.

### Second Term.

**Physics 2.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Philosophy 1.** — Psychology, Hill's; Sully's. *Four hours a week.*
PROFESSOR SHIPMAN.

**English 3.** — Themes. PROFESSOR SHIPMAN.

**Elective.** — Nine hours a week from the following elective studies: Latin 4; Greek 5; English 9; German 2; French 2; History 2, 6; Mathematics 4; Engineering 2, 3, 4, 7, 8; Physics 3; Chemistry 2; Biology 2; Oratory 2.

## SENIOR YEAR.

### First Term.

**Philosophy 2.** — Ethics; Calderwood's Moral Science, with references to Kant's Metaphysic of Ethics and Ueberweg's History of Philosophy. *Four hours a week.* PRESIDENT CAPEN.

**Philosophy 3.** — Logic, Jevons's; Davis's. *Three hours a week.*
PROFESSOR SHIPMAN.

**Elective.** — Nine hours a week from the following elective studies: Hebrew; Latin 5; Greek 6; English 5, 10; German 3; French 3; Italian; Philosophy 4, 6; History 3, 4, 7; Jurisprudence 1; Mathematics 5; Engineering 5; Physics 4, 5, 6; Astronomy; Chemistry 3, 4; Biology 3, 4; Geology 1; Oratory 2.

### Second Term.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures and Independent Investiga-

tions dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Four hours a week.* PRESIDENT CAPEN.

**Elective.** — Nine hours a week from the following elective studies: Hebrew; Latin 5; Greek 6; English 5, 12; German 3; French 3; Italian; Philosophy 5, 7; History 3, 4; Jurisprudence 2; Mathematics 5; Engineering 5; Physics 4, 5, 7; Chemistry 4, 5, 6; Biology 3, 4; Geology 2; Oratory 2.

## COURSE II.

Two alternate courses are offered according as Advanced German (Course A), or Advanced French (Course B), has been presented for admission.

### COURSE A.

#### FRESHMAN YEAR.

**First Term.**

**Latin 1, Mathematics 1,** and **English 1.** — As in Course I. (See pages 30, 31.) *Ten hours a week.*

**French 1.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

OPTION. — **Greek 1.** — Elementary Greek. Goodwin's Greek Grammar; White's First Lessons in Greek; Xenophon, Anabasis (Goodwin). *Five hours a week.* ASST. PROFESSOR GRAVES.

**or,**

**German 3.** — Schiller, Maria Stuart (with Dünzer's Erläuterungen); Geschichte des Abfalls der Niederlande (selections); Goethe, Egmont. *Three hours a week.* PROFESSOR FAY.

**Second Term.**

**Latin 1, Mathematics 1,** and **English 1.** — As in Course I. (See page 31.) *Ten hours a week.*

**French 1.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Four hours a week.* MR. LEWIS.

OPTION. — **Greek 1.** — Elementary Greek. Xenophon, Anabasis; Homer, Iliad (Seymour); Greek Prose Composition (Jones). *Five hours a week.* ASST. PROFESSOR GRAVES.

or,

**German 3.** — Müller's Geschichte, §§ 374–419 (The Thirty Years' War); Schiller, Wallenstein; Balladen und Romanzen (Buchheim's collection); two essays in German. *Three hours a week.* PROFESSOR FAY.

## SOPHOMORE YEAR.

### First Term.

**Latin 2, English 2, Mathematics 2,** and **Oratory 1.** — As in Course 1. (See page 32.) *Eleven hours a week.*

**French 2.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.*

MR. LEWIS.

OPTION. — **Greek 2.** — Xenophon, Memorabilia or Cyropædia; Herodotus, Book VI; Lectures on Attic and Ionic Dialects and on Grecian History; Greek Prose Composition, Allinson. *Four hours a week.*

ASST. PROFESSOR GRAVES.

or,

**German 4.** — Lessing, Prosa, Nathan der Weise; Goethe, Tasso; Düntzer, Erläuterungen zu Nathan, zu Tasso; two essays in German. *Three hours a week.* PROFESSOR FAY.

### Second Term.

PRESCRIBED STUDIES. — As in Course 1. (See page 32.)

ELECTIVE. — Six hours a week (seven, if Greek 2 is elected) from the following elective studies: Latin 3; Greek 2; English 4, 7; German 4 (continued); French 2 (continued); Mathematics 3, 6.

## JUNIOR YEAR.

PRESCRIBED STUDIES. — As in Course I. (See page 33.)

ELECTIVE. — In addition to the Junior electives for Course I, Greek 3, 4, French 3 and German 5 are open.

## SENIOR YEAR.

PRESCRIBED STUDIES. — As in Course I. (See pages 33, 34.)

ELECTIVE. — In addition to the Senior electives for Course I, Greek 5 and French 4 are open.

## COURSE B.

As in Course A, substituting for each course in French the course in German of the same number, and *vice versa.* (See pages 39, 40.)

## PHILOSOPHICAL COURSE.

This course of study, leading to the degree of Bachelor of Philosophy, coincides with the foregoing in the Junior and Senior years, and varies from them in the first two years according as Intermediate German (Course A), or Intermediate French (Course B), has been presented for admission (see page 24), as follows: —

### COURSE A.

#### FRESHMAN YEAR.

##### First Term.

**Latin 1, Mathematics 1,** and **English 1.** — As in the Classical Course. (See pages 30, 31.) *Ten hours a week.*

**French 1.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

**German 2.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hours a week.* PROFESSOR FAY.

##### Second Term.

**Latin 1, Mathematics 1,** and **English 1.** — As in the Classical Course. (See page 31.) *Ten hours a week.*

**French 1.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Four hours a week.* MR. LEWIS.

**German 2.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; one essay in German. *Three hours a week.* PROFESSOR FAY.

#### SOPHOMORE YEAR.

##### First Term.

**Latin 2, English 2, Mathematics 2,** and **Oratory 1.** — As in the Classical Course. (See page 32.) *Eleven hours a week.*

**French 2.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.* MR. LEWIS.

**German 3.** — Schiller, Maria Stuart (with Dünzer's Erläuterungen); Geschichte des Abfalls der Niederlande (selections); Goethe, Egmont. *Three hours a week.* PROFESSOR FAY.

**Second Term.**

PRESCRIBED STUDIES. — As in the Classical Course I. (See page 32.)

ELECTIVE. — Six hours a week from the following elective studies: Latin 3; English 4, 7; German 3 (continued); French 2 (continued); Mathematics 3, 6.

**JUNIOR YEAR.**

PRESCRIBED STUDIES. — As in the Classical Course. (See page 33.)

ELECTIVE. — In addition to the regular Junior electives for the Classical Course I, Greek 1 (counting as three hours), French 3 and German 4 are open.

**SENIOR YEAR.**

PRESCRIBED STUDIES. — As in the Classical Course. (See pages 33, 34.)

ELECTIVE. — In addition to the Senior electives for the Classical Course I, Greek 2 (counting as three hours), French 4 and German 5 are open.

## COURSE B.

As in Course A, substituting for each course in French the course in German of the same number, and *vice versa*. (See pages 39, 40.)

## ELECTIVE STUDIES.

For regulations regarding elective studies, see page 78.

**Hebrew.** — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism; History of Hebrew Religion. *Three hours a week for the year.* DR. CURTIS.

**Latin 3.** — Terence, Adelphi; Tacitus, Annals. *Three hours a week for the second term.* PROFESSOR DEARBORN.

**4.** — Juvenal; Cicero, De Officiis. *Three hours a week for the year.* PROFESSOR DEARBORN.

**5.** — Pliny, Letters; Terence; Lucretius. *Three hours a week for the year.* PROFESSOR DEARBORN.

**Greek 1.** — Elementary Greek; Goodwin's Greek Grammar; White's First Lessons in Greek; Xenophon, Anabasis; Homer, Iliad; Greek Prose Composition. *Five hours a week for the year (counting as three hours).* ASST. PROFESSOR GRAVES.

**2.** — Xenophon, Memorabilia or Cyropædia; Herodotus, Book VI; Thucydides, parts of Books VI and VII; Homer, Odyssey (Phæacian Episode); Lectures on Attic, Ionic, and Epic Dialects, and on Grecian History; Greek Prose Composition. *Four hours a week for the year.* ASST. PROFESSOR GRAVES.

**3.** — Ten Attic Orators, Jebb's Attic Orators as Commentary; Lectures on Attic Law, Greek Life; Goodwin's Greek Moods and Tenses. *Three hours a week for the first term.* ASST. PROFESSOR GRAVES.

**4.** — The Dramatists; Study of Rhythm and Metre; Lectures on the Development of the Drama, the Greek Theatre, and the Dramatists. *Three hours a week for the second term.* ASST. PROFESSOR GRAVES.

**5.** — Plato, Symposium; Sight-Reading in the Odyssey; Tyler's Lyrics; Orations of Lysias; Theocritus, Idylls. *Three hours a week for the year.* PROFESSOR SCHNEIDER.

**6.** — Aristotle, Ethics; Pindar, Odes. *Three hours a week for the year.* PROFESSOR SCHNEIDER.

**English 4.** — English Composition (advanced course). *Three hours a week for the second term.* PROFESSOR SHIPMAN.

**5.** — English Composition. *Three hours a week for the year.* (Course 5 may be taken as an extra elective only.) PROFESSOR SHIPMAN.

**6.**[1] — English Literature. Chaucer. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**7.** — English Literature. Shakspeare. *Three hours a week for the second term.* PROFESSOR MAULSBY.

**8.**[1] — English Literature. Milton to Johnson. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**9.** — English Literature. Burns to Wordsworth. *Three hours a week for the second term.* PROFESSOR MAULSBY.

**10.**[2] — English Literature. Carlyle to Tennyson. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**11.**[2] — American Literature. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**12.** — English Literature. Study of a Special Topic. (See page 59.) *Three hours a week for the second term.* PROFESSOR MAULSBY.

**13.** — History of the English Language. *Three hours a week for the first term.* PROFESSOR MAULSBY.

**German 1.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II; Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Four hours a week for the first term, three for the second term.* PROFESSOR FAY.

**2.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; Grammar and Composition; one essay in German. *Three hours a week for the year.* PROFESSOR FAY.

**3.** — Schiller, Maria Stuart (with Dünzer's Erläuterungen), Geschichte des Abfalls der Niederlande (selections); Goethe, Egmont; Müller's Geschichte, §§ 374–419 (The Thirty Years' War); Schiller, Wallenstein; Balladen und Romanzen (Buchheim's collection); two essays in German. *Three hours a week for the year.* PROFESSOR FAY.

[1] English 6 and 8 are offered in alternate years, the latter being given in 1892–93.

[2] English 10 and 11 are offered in alternate years, the former being given in 1892–93.

**German 4.** — Lessing, Prosa, Nathan der Weise; Goethe, Tasso, Faust; Dunzer, Erläuterungen zu Nathan, zu Tasso, zu Faust; two essays in German. *Three hours a week for the year.* PROFESSOR FAY.

**5.** — Vilmar, Geschichte der deutschen Literatur, with illustrative texts for principal epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. Thesis for honor men. *Three hours a week for the year.* PROFESSOR FAY.

(Course 5 will not be given in 1893-94.)

**French 1.** — Edgren's Grammar; Super's French Reader; Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Four hours a week for the first term, three hours a week for the second term.* MR. LEWIS.

**2.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie; Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week for the year.* MR. LEWIS.

**3.** — Literature of the 17th century: Racine, Andromaque, Mithridate, Phèdre; Molière, Le Bourgeois Gentilhomme, Le Misanthrope, Le Tartufe; La Société Française au XVII^e^ Siècle (Crane); Molière, Les Précieuses Ridicules, Les Femmes Savantes; Madame de Sévigné, Lettres Choisies; one essay in French. (Ploetz's Nouvelle Grammaire Française will be used for reference in Course 3, and the German exercises of his Cours Gradué de Thèmes will be translated into French.) *Three hours a week for the year.* PROFESSOR FAY.

**4.** — Literature of the 19th century: Le Romantisme Français (Crane); Hugo, Hernani, Ruy Blas, L'Année Terrible; Lamartine, Jocelyn; George Sand, Indiana; De Musset, Confessions d'un Enfant du Siècle; De Vigny, Cinq-Mars; Taine, La Fontaine et ses Fables; Cherbuliez, Méta Holdenis; two essays in French. *Three hours a week for the year.* MR. LEWIS.

**5.** — Demogeot, Littérature de la Langue Française, with illustrative texts for 16th and 18th centuries; two essays in French. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. Thesis for honor men. *Three hours a week for the year.* PROFESSOR FAY.

(Course 5 will not be given in 1893-94.)

**Italian.** — Grandgent's Grammar and Composition; De Amicis, Spagna; Dante, Divina Commedia (Scartazzini's edition). *Three times a week for the year.* PROFESSOR FAY.

(Open to students who have had two years of French.)

**Philosophy 4.** — History of Philosophy. *Three hours a week for the first term.* PROFESSOR SHIPMAN.

**5.** — Logic (advanced course). *Three hours a week for the second term.* PROFESSOR SHIPMAN.

**6.** — The Philosophy of Religion. Lectures, Recitations, and Topical Reports. *Four hours a week for the first term.* PROFESSOR KNIGHT.

**7.** — Practical Ethics. Contemporary Problems of Education, Charities, Temperance, Socialism, etc. *Four hours a week for the second term.* PROFESSOR TOUSEY.

**History 2.** — Modern History from the Fall of Constantinople. (*a*) Modern Europe; Period of the Reformation; Growth of the Modern State. (*b*) American Colonial History; Colonization and Struggle for Supremacy in the New World. Lectures, Recitations, Theses, and Topical Reports. *Three hours a week for the year.* MR. START.

(Course 2 will not be given until 1893–94.)

**3.** — Political and Constitutional History of the United States. The Revolution; the Confederation; Politics and Constitutional Development, and Progress of the Nation. Lectures, Recitations, Theses, and Topical Reports. *Three hours a week for the year.* MR. START.

(Course 3 will not be given until 1894–95.)

**4.** — Seminary for Research in Special Directions. (Open only by permission of the Instructor to a limited number of students who have passed History 1 and 2 with credit, and are also taking History 3. Candidates for honors in History must take this course.) MR. START.

(Course 4 will not be given until 1894–95.)

**5.** — History of the Christian Church, from its beginning to the Reformation. Lectures, Recitations, and Topical Reports. *Four hours a week for the first term.* PROFESSOR KNIGHT.

**6.** — Modern Church History; The Reformation; Origin and Characteristics of the Sects; History of Rationalism. Lectures and Topical Reports. *Four hours a week for the second term.* PROFESSOR KNIGHT.

**7.** — Comparative History of Religions. *Three hours a week for the first term.* PROFESSOR KNIGHT.

**Jurisprudence 1.** — Ancient Law; Roman Law. *Three hours a week for the first term.* PRESIDENT CAPEN.

**2.** — International Law. *Three hours a week for the second term.* PRESIDENT CAPEN.

**Mathematics 3.** — Taylor's Differential and Integral Calculus *Three hours a week for the second term.* PROFESSOR BROWN.

**4.** — Differential and Integral Calculus (advanced course). *Three hours a week for the year.* PROFESSOR BROWN.

**5.** — Geometry of Three Dimensions; Advanced Analytic Geometry. *Three hours a week for the year.* PROFESSOR BROWN.

**6.** — Advanced Algebra. Elements of Determinants and Theory of Equations. *Two hours a week for the second term.* PROFESSOR BROWN.

**Engineering 1.** — Descriptive Geometry: Shades and Shadows; Perspective. *Four hours a week for the second term.* PROFESSOR BRAY.

**2.** — Steam Engine, Theory and Construction. *Three hours a week for the second term.* PROFESSOR BRAY.

**3.** — Applied Mechanics. *Four hours a week for the year.* PROFESSOR BRAY.

**4.** — Mechanical Drawing. (See Engineering Courses.) *Three hours a week.* MR. SANBORN.

**5.** — Mechanical Drawing (advanced course). (See Engineering Courses.) *Three hours a week.* MR. SANBORN.

**6.** — Freehand Drawing. *Two hours a week for the first term.* MR. SANBORN.

**7.** — Surveying, Lectures, and Recitations. *Two hours a week for the year.* MR. DANIELS.

**8.** — Topographical Drawing, with Field Work, Chain, Compass, Level, and Transit. *Three hours a week for the year.* MR. DANIELS.

**Physics 3.** — Physical Laboratory. Mechanics and Electricity, Stewart and Gee; Sound, Heat, and Light, Glazebrook and Shaw. *Three hours a week for the year.* PROFESSOR HOOPER.

**4.** — Physical Laboratory (advanced course). Mechanics and Electricity, Stewart and Gee; Electrical Testing, Kempe; Absolute Measurement, Gray. *Three hours a week for the year.* PROFESSOR HOOPER.

**5.** — Electricity. Thompson's Dynamos; Kapp's Electrical Transmission of Energy. Recitations and Lectures. *Three hours a week for the year.* PROFESSOR HOOPER.

**6.** — Philosophy of Physics. Lectures. *Two hours a week for the first term.* PROFESSOR DOLBEAR.

(Course 6 may be taken as an extra elective only.)

**Physics 7.** — Spencer's First Principles. *Two hours a week for the second term.* PROFESSOR DOLBEAR.

**Astronomy.** — Young's Astronomy. *Two hours a week for the first term.* PROFESSOR DOLBEAR.

**Chemistry 2.** — Qualitative Analysis. Basic Analysis; Lectures and Laboratory Work. *Three hours a week for the second term.* PROFESSOR COMEY and MR. DURKEE.

**3.** — Qualitative Analysis, continued. Acid Analysis; Analysis of Salts and Natural Products. *Three hours a week for the first term.* PROFESSOR COMEY.

**4.** — Quantitative Analysis. Gravimetric and Volumetric Analysis; Analysis of Ores. *Three hours a week for the year.* PROFESSOR COMEY.

(Course 4 is open to students who have taken Course 2.)

**5.** — Quantitative Analysis (advanced course). Analysis of Water, Food Products, etc. *Three hours a week for the second term.* PROFESSOR COMEY.

**6.** — Organic Chemistry. Lectures, Recitations, and Laboratory Work. *Three hours a week for the second term.* PROFESSOR COMEY.

(Course 5 is open to students who have taken Course 4.)

**Biology 2.** — General Biology. An Outline of the General Structure and Physiology of Animals and Plants. Lectures and Laboratory Work. *Three hours a week for the year.* PROFESSOR KINGSLEY.

**3.** — Zoölogy — continuation of Course 2. *Four hours a week for the year.* PROFESSOR KINGSLEY.

(Course 3 is open to students who have taken Course 2.)

**4.** — Histology and Embryology. *Three hours a week for the year.* PROFESSOR KINGSLEY.

(Course 4 is open to students who have taken Course 2.)

**5.** — The Philosophy of Biology. *One lecture a week for the first term.* PROFESSOR KINGSLEY.

**Geology 1.** — Mineralogy. Qualitative and Quantitative Blow-pipe Analysis. *Three hours a week for the first term.* PROFESSOR MARSHALL.

**2.** — Geology, Lithology, and Palæontology. Lectures, Recitations, and Laboratory Work. *Three hours a week for the second term.* PROFESSOR MARSHALL.

(Course 2 is open to students who have taken Course 1.)

**Oratory 2.** — Individual Recitations, with Private Drill; Original Declamations; Practice in Debate. *One hour a week for two years.* PROFESSOR MAULSBY.

## ENGINEERING COURSES.

Two courses in Engineering are provided, each occupying four years. The course in Electrical Engineering leads to the degree of Bachelor of Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The degree of Bachelor of Civil Engineering is given on the same conditions to students who have pursued the Course in Civil Engineering. It is believed that four years spent, mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the Classical and Philosophical Courses may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

### ELECTRICAL ENGINEERING.

The aim of the course in this department, leading to the degree of Bachelor of Electrical Engineering, is to impart such information, and afford such mental discipline and manual training, as will enable a young man of ability to occupy a responsible position in any branch of electrical engineering. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 87.) The plan of the course is as follows: —

#### FRESHMAN YEAR.

##### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Geometric and Orthographic Drawing; Lettering; Use of Scales. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Sketching of Working Drawings; Models, Casts, etc. *One hour a week.* MR. SANBORN.

**Shop Work.** — Woodwork; Carpentry; Pattern-Making; Turning. *Two hours a week.* (See note.[1])

**Rhetoric.** — Extemporaneous Composition. *Two hours a week.* PROFESSOR SHIPMAN.

**French.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

or,

**German.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

### Second Term.

**Mathematics.** — Spherical Trigonometry; Physical Arithmetic. *Four hours a week.* MR. SANBORN.

**Descriptive Geometry.** — Problems of Points, Lines, and Planes; Tangencies; Intersections; Shades and Shadows; Perspective. *Four hours a week.* PROFESSOR BRAY.

**Mechanical Drawing.** — Machines and Architectural Drawing; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Physics.** — Mechanics, Daniell's Principles of Physics. *Three hours a week.* PROFESSOR HOOPER.

**Rhetoric.** — Extemporaneous Composition. *One hour a week.* PROFESSOR SHIPMAN.

**French.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* MR. LEWIS.

or,

**German.** — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.* PROFESSOR FAY.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Four hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

[1] During the present year, the instruction will be given in Shop Work at the Cambridge Manual Training School. A Manual Training School is about to be erected at College Hill, and will be ready for use in 1893-94.

**Elements of Mechanism.** — Construction of Cams; Linkwork; Gears, etc. *One hour a week.* MR. SANBORN.

**Drawing.** — Detail and Assembly Drawings. *Two hours a week.* MR. SANBORN.

**French.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.* MR. LEWIS.

or,

**German.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hours a week.* PROFESSOR FAY.

ELECTIVE. — In addition to the above, one of the following elective studies: —

**English Philology.** — History of the English Language. *Three hours a week.* PROFESSOR MAULSBY.

**English Literature.** — 1840 to the present time. *Three hours a week.* PROFESSOR MAULSBY.

**Rhetoric.** — Carpenter's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN

**Second Term.**

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* PROFESSOR BROWN.

**Physics** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *Two hours a week.* (See note, page 45.)

**Drawing.** — Detail and Assembly Drawings. *Two hours a week.* MR. SANBORN.

**French.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.* MR. LEWIS.

or,

**German.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; one essay in German. *Three hours a week.* PROFESSOR FAY.

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Chemistry.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.* PROFESSOR COMEY and MR. DURKEE.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Physical Laboratory.** — Magnetic and Electrical Measurements; Construction of Apparatus; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Drawing.** — Machine Drawing. *One and a half hours a week.* MR. SANBORN.

**Shop Work.** — Chipping; Filing; Polishing; Bolt Cutting; Tapping; Turning; Boring, etc. *One and a half hours a week.* (See note, page 45)

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Steam Engineering.** — Description of Types of Engines and Boilers; Theory and Construction of Details; Dimensions for Required Power; Steam Engine Indicators; Calorimeters; Valve Gears and their Adjustment. *Four hours a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring; Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Physical Laboratory.** — Magnetic and Electrical Measurements; Construction of Apparatus. *Two hours a week.* PROFESSOR HOOPER.

**Drawing.** — Boiler and Steam Engine Drawing. *One and a half hours a week.* MR. SANBORN.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Theory of Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Kinematics of Machines.** — General Theory of Machines; Theory of Prime Movers; Construction and Location of Machines; Designs and Reviews of Special Machines. *Two hours a week.* PROFESSOR BRAY.

**Electricity.** — Thompson's Dynamo-Electric Machinery; Kapp's Electrical Transmission of Energy; Systems of Lighting; Lectures and Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Dynamo Testing; Accumulators; Photometry of Arc and Incandescent Lamps; Testing of Lines and Conductors. *Five hours a week.* PROFESSOR HOOPER.

**Drawing.** — Machine Designing. *Three hours a week.* MR. SANBORN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

### Second Term.

**Electricity** — Fleming's Induction of Currents; Design of Dynamos; Electrical Railways; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Construction of Electrical Machinery; Special Investigations. *Five hours a week.* PROFESSOR HOOPER.

**Technical Applications of Electricity.** — Lectures on Telegraph, Telephone, Electro-Metallurgy, etc. *Two hours a week.* PROFESSOR DOLBEAR.

**Political Economy.** — History of Finance; Banking; Taxation; Principles of Civil Government; Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Four hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department, leading to the degree of Bachelor of Civil Engineering, has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. The degree of Civil Engineer will be granted to graduates of this course after certain additional requirements have been fulfilled, as stated under the Graduate Department, page 87. The plan of the course is as follows: —

## FRESHMAN YEAR.

### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Geometric and Orthographic Drawing; Lettering; Use of Scales. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Sketching of Working Drawings; Models, Casts, etc. *One hour a week.* MR. SANBORN.

**Shop Work.** — Woodwork; Carpentry; Pattern-Making; Turning. *Two hours a week.* (See note, page 45).

**Rhetoric.** — Extemporaneous Composition. *Two hours a week.* PROFESSOR SHIPMAN.

**French.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

**or,**

**German.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

### Second Term.

**Mathematics.** — Spherical Trigonometry; Physical Arithmetic. *Four hours a week.* MR. SANBORN.

**Descriptive Geometry.** — Problems of Points, Lines, and Planes; Tangencies; Intersections; Shades and Shadows; Perspective. *Four hours a week.* PROFESSOR BRAY.

**Mechanical Drawing.** — Machine and Architectural Drawing; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Physics.** — Mechanics, Daniell's Principles of Physics. *Three hours a week.* PROFESSOR HOOPER.

**Rhetoric.** — Extemporaneous Composition. *One hour a week.* PROFESSOR SHIPMAN.

**French.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* MR. LEWIS.

**or,**

**German.** — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.* PROFESSOR FAY.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Four hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Surveying.** — Principles of Land Surveying; Use and Construction of Instruments. Lectures and Recitations. *Two hours a week.* MR. DANIELS.

**Field Work.** — Work with Chain, Compass, and Transit. *One and a half hours a week.* MR. DANIELS.

**Drawing.** — Plotting. *One and a half hours a week.* MR. DANIELS.

**French.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.* MR. LEWIS.

or,

**German.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hour a week.* PROFESSOR FAY.

ELECTIVE. — In addition to the above, one of the following elective studies: —

**English Philology.** — History of the English Language. *Three hours a week.* PROFESSOR MAULSBY.

**English Literature.** — 1840 to the present time. *Three hours a week.* PROFESSOR MAULSBY.

**Rhetoric.** — Carpenter's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* PROFESSOR BROWN.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Mathematical Astronomy.** — *Two hours a week.* PROFESSOR BROWN.

**Surveying.** — Topographical, Mine, Hydrographic, and Railroad Surveying. Lectures and Recitations. *Two hours a week.* MR. DANIELS.

**Drawing.** — Plotting and Topographical Drawing; Sketching and Brush Shading. *One and a half hours a week.* MR. DANIELS.

**Field Work** — Work with Transit and Level. *One and a half hours a week.* MR. DANIELS.

**Shop Work** — Blacksmithing; Forging of Iron and Steel. *Two hours a week.* (See note, page 45.)

**French.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.* MR. LEWIS.

or,

**German.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; one essay in German. *Three hours a week.* PROFESSOR FAY.

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Chemistry.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.* PROFESSOR COMEY and MR. DURKEE.

**Drawing.** — Topographical Drawing. *One and a half hours a week.* MR. DANIELS.

**Field Work.** — Work with Plane Table and Stadia. *One and a half hours a week.* MR. DANIELS.

OPTION.[1] — **Electricity.** — Units; Theory of Measurements: Electrical Calculations. *Two hours a week.* PROFESSOR HOOPER.

or,

**Geology.** — Descriptive and Practical Geology. *Two hours a week.* PROFESSOR MARSHALL.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

[1] Students electing Electricity in the Junior year will continue that subject in the Senior year; and those electing Geology and Chemistry in the Junior year will continue Chemistry.

**Mechanics.** — Applied Mechanics. *Four hours a week.*
PROFESSOR BRAY.

**Steam Engineering.** — Description of Types of Engines and Boilers; Theory and Construction of Details; Dimensions for Required Power; Steam Engine Indicators; Calorimeters; Valve Gears and their Adjustment. *Four hours a week.* PROFESSOR BRAY.

**Drawing.** — Machine Drawing; Boiler and Steam Engine Drawing; Structure Drawing. *Three hours a week.* MR. SANBORN.

OPTION. — **Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. *Two hours a week.* PROFESSOR HOOPER.

**or,**

**Chemistry.** — Basic Qualitative Analysis; Lectures and Laboratory Work. *Three hours a week.* PROFESSOR COMEY and MR. DURKEE.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Theory of Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Civil Engineering.** — Strength of Materials; Laboratory Work with Testing Machine; Stability of Structures of Stone, Wood and Iron. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Railways and Highways; Lectures and Recitations. *Three hours a week.* PROFESSOR BRAY.

**Drawing.** — Stereotomy. *One and a half hours a week.* MR. DANIELS.

**Field Work.** — Location of Roads and Railroads. *One and a half hours a week.* MR. DANIELS.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

OPTION. — **Electricity.** — Thompson's Dynamo-Electric Machinery; Kapp's Transmission of Energy; Systems of Lighting. Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**or,**

**Chemistry.** — Qualitative Analysis, continued. Acid Analysis; Analysis of Salts and Natural Products. *Three hours a week.*
PROFESSOR COMEY.

**Second Term.**

**Civil Engineering.** — Bridge and Roof Building; Drainage and Sewerage; Hydraulics; Masonry Construction. *Four hours a week*
PROFESSOR BRAY.

**Road Engineering.** — Economic Considerations, with Designing of Mechanical Structures. *Two hours a week.* PROFESSOR BRAY.

**Drawing.** — Bridges and Roof Trusses; Water Works and Sewerage Systems. *Two hours a week.* MR. DANIELS.

**Political Economy.** — History of Finance; Banking; Taxation; Principles of Civil Government; Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Four hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

OPTION. — **Electricity.** — Fleming's Induction of Currents; Design of Dynamos; Electrical Railways; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**or,**

**Chemistry.** — Quantitative Analysis, Gravimetric and Volumetric. *Four hours a week.* PROFESSOR COMEY.

**Preparation of Thesis.**

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## GROUPS OF RELATED STUDIES.

The subjoined table, summarizing the subjects in the Classical and Philosophical Courses, is intended as an aid to the student in planning his work. It presents a classification of studies into nine groups, eight of subjects valuable for general culture, and the ninth of courses such as may be profitably pursued by students intending to enter upon technical or engineering work. A student wishing to follow a certain line of study will see from this table what subjects are most closely related to his work; but all students are advised to consult with the instructor whose department is to be their specialty, before making their selection, the choice of co-ordinated courses being often of great importance. Reference from this table should be made to the lists of required and elective studies, and to the description of work and methods given under the caption, "Departments of Instruction."

| I. Ancient Languages. | II. Modern Languages. | III. English. |
|---|---|---|
| *Latin.*<br>1. Livy, etc.<br>2. Horace, Cicero.<br>3. Terence, Tacitus.<br>4. Juvenal, Cicero.<br>5. Pliny, Terence, Lucretius.<br><br>*Greek.*<br>1. Elementary.<br>2. Historians.<br>3. Orators.<br>4. Dramatists.<br>5. Plato, Theocritus.<br>6. Aristotle, Pindar.<br><br>*Hebrew.* | *French.*<br>1. Elementary.<br>2. For rapid reading.<br>3. Literature of 17th cent.<br>4. Literature of 19th cent.<br>5. History of Literature, Old French.<br><br>*German.*<br>1. Elementary.<br>2. Epic, Drama, History.<br>3. Schiller and Goethe.<br>4. Lessing; Goethe's Faust.<br>5. History of Literature, Middle High German.<br><br>*Italian.* | *English.*<br>1. English Composition.<br>2. Rhetoric.<br>3. Themes.<br>4. English Composition (adv.).<br>5. English Composition (ex.).<br>6. Chaucer.<br>7. Shakespeare.<br>8. English Lit. 1630–1780.<br>9. English Lit. 1780–1830.<br>10. English Lit. 1830–1890.<br>11. American Literature.<br>12. Special Topics.<br>13. History of Language.<br><br>[Courses 6 to 12 inclusive are English Literature.]<br><br>*Oratory* 1 and 2. |
| **IV. Philosophy.** | **V. History and Political Science.** | **VI. Mathematics.** |
| *Philosophy.*<br>1. Psychology.<br>2. Ethics.<br>3. Logic.<br>4. History of Philosophy.<br>5. Philosophy of Religions.<br>6. Practical Ethics.<br><br>[Students of Philosophy will find in VII, Biol. I, and in VIII, Physics 6 and 7, of value.] | *History.*<br>1. Middle Ages.<br>2. Modern.<br>3. Constitution of U. S.<br>4. Honor Seminary.<br>5. Christ. Church to Ref.<br>6. Christ. Church since Ref.<br>7. Comparative Religions.<br><br>*Jurisprudence.*<br>1. Ancient and Rom. Law.<br>2. International Law.<br><br>*Political Economy.*<br><br>[Ancient History in connection with I, Latin 1, and Greek 1.] | *Mathematics.*<br>1. Algebra, Solid and Spherical Geometry, Trigonometry.<br>2. Spherical Trigonometry, Analytical Geometry.<br>3. Calculus.<br>4. Calculus (adv.).<br>5. Geometry of Three Dimensions, Analytical Geometry (adv.).<br>6. Advanced Algebra.<br><br>[Also Astronomy (see VIII), and Engineering 1, (see IX).] |
| **VII. Natural Science.** | **VIII. Physical Science.** | **IX. Engineering.** |
| *Geology.*<br>1. Mineralogy.<br>2. Geology.<br><br>*Biology.*<br>1. Physiology.<br>2. Structural Biology.<br>3. Zoology.<br>4. Histology.<br>5. Philosophy of Biology. | *Physics.*<br>1. Mechanics.<br>2. General Physics.<br>3. Physical Laboratory.<br>4. Physical Lab'y (adv.).<br>5. Electricity.<br>6. Philosophy of Physics.<br>7. Spencer's First Prin.<br><br>*Chemistry.*<br>1. Inorganic.<br>2. Qualitative Anal. (basic).<br>3. Qualitative Anal. (acid).<br>4. Quantitative Analysis.<br>5. Quantitative Anal (adv.).<br>6. Organic.<br><br>*Astronomy.* | *Engineering.*<br>1. Descriptive Geometry.<br>2. Steam Engineering.<br>3. Applied Mechanics.<br>4. Mechanical Drawing.<br>5. Mechanical Drawing (adv.).<br>6. Free-hand Drawing.<br>7. Surveying.<br>8. Topographical Drawing.<br><br>[All courses in VI, Geology 1 in VII, and all courses in Physics in VIII, are of direct value to students of Engineering.] |

# Departments of Instruction.

**Latin.** — The required course of study in this department is arranged and conducted with a view to giving students (1) a good knowledge of the language and a portion of the literature, and, as a result of the careful and critical translation of Latin, greater facility and accuracy in the use of English; (2) a familiar acquaintance with the leading facts in the history of the Roman people, the fundamental principles of their political constitution, and the most important features in their public and private life, acquired partly from reading the Latin authors, partly by a special study of the subjects; and (3), what is of more value than knowledge itself, that mental training by which a man is better equipped for any pursuit in life, and that habit of independent study and research which is essential to all true scholarship.

In the early part of the course the forms and construction of the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place throughout the course. Reading, without translation, is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures on the history of the Latin language and literature are given to the Freshman Class.

The elective courses are especially adapted to the needs and attainments of those who elect the study; but in all cases more attention than before is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and

private investigations of the students, the results of which are presented in brief essays read and criticised before the class.

The opportunity to do extra work is offered to those who have the requisite time and ability.

**Greek.** — During the Freshman year the student is trained in the reading and writing of Attic Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, studies are made of the customs and daily life of the people. The relations of the language to the English tongue are discussed, and the course is shaped throughout with a view to develop, discipline, and enrich the linguistic resources of the student. A critical study of the orators and dramatists is undertaken in the Sophomore year. At suitable points, discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

Throughout the course the practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature.

Opportunity to elect Greek is offered from the middle of the Sophomore year. With the Juniors the Symposium of Plato, the Clouds of Aristophanes, and the Idylls of Theocritus are used, supplemented with sight-reading in the Odyssey, Herodotus, the orations of Lysias, and Greek lyrics. An extended course in Greek prose composition may be taken. Members of the Senior class electing Greek may be sufficiently advanced to read Aristotle's Ethics and the Odes of Pindar.

Students who have entered without Greek on the new A.B. course may elect elementary Greek. They will be

given instruction for five hours a week. It is expected that their previous training in language will enable them to accomplish in their first year the work usually done in preparation for college, and thus fit them to join, at the beginning of their Sophomore year, the Freshmen entering on the classical course.

**Modern Languages.** — Five consecutive courses are offered in French, five in German, and one in Italian. All candidates for admission are required to pass examination upon the elements of either German or French; those admitted without Greek must also be prepared for advanced standing in the alternate modern language. In all courses the minimum language (that in which merely the elementary examination has been passed) becomes a required study for the Freshman year, and for an additional year in the two literary courses in which Greek is not required for admission. Elective privileges in the minimum language are offered for the remainder of the course. Candidates for the degree of Ph. B. pursue their advanced language also as a required study for a year and a half from entrance, with elective privileges for the remainder of their course. Candidates for the degree of A. B. without Greek may either drop their maximum language to take up elementary Greek, or pursue it as an optional and elective study until the end of Junior year. Italian is an elective only to those who have pursued French for at least two years.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as

may properly accompany advanced work in a literary department.

Hence, in the elementary courses facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced courses, the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. In all courses composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the languages, he is trained from the outset to hear and to understand them when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

**Rhetoric.** — The course of instruction in Rhetoric aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are assigned, with some variety of method, at the time of writing, — usually not the same topic for all, but a list is furnished from which each writer may select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification, this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. Text-books are used as the basis of instruction, and made, as far as possible, helps to the intelligent discussion of principles, rather than burdens to be carried. The close relation of Rhetoric to both Psychology and Logic is kept in sight.

Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the end of the fourth year. The student's work in Literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays.

The required Rhetoric may be followed by an elective course in some of the applications of the subject, or exclusively in composition.

**English Literature.** — The study of English Literature is open, as an elective, from the middle of the Sophomore to the close of the Senior year. The two years assigned to the study of representative authors, from Chaucer to Browning, are intended primarily to give an appreciative knowledge of our literature. While acquaintance with the views of eminent critics is encouraged, the student is urged to form carefully his own opinions, based upon what literature he has actually read. Some attention is paid to biographical details and to striking events in the history of the period, but to read intelligently the literature itself is esteemed of first importance. The general method pursued is to examine a few masterpieces in the class-room with some minuteness, and to supplement this study with the private reading of other works of the author considered. Students are frequently asked to investigate special topics, and to report to the class the results of their labor. Multiple copies of many of the works studied in the class-room are to be found in the library. The latter half of the Senior year is devoted to the treatment of a special subject; as, the history of the drama, the development of the novel, the principles of literary criticism. In studying the history of English the aim of the course is to follow in outline the stages of the development of the language, with some reference to kindred forms in French and German, and special attention to the ancestry of modern English words.

An elective in the works of American authors has been added, in the belief that the literature of our own country is sufficiently distinct in genesis and character to be made the subject of special attention.

**Oratory.** — Oratory is taught with the purpose of making prominent its practical side. Exercises in breathing, vocalization, and gesture are introduced; specimens of good literature are read and recited; leading principles are discovered and illustrated, — all with reference to the ultimate practical value to the student. In the first term of the Sophomore year attention is given to acquiring the power to read aloud with intelligence, naturalness, and force. Gesture is introduced in the second term. In the advanced course, which may be elected through the Junior and Senior years, the work consists of individual study and delivery of selections, also the preparation of original declamations and debates, with rehearsal and criticism. Occasional public recitals give the student opportunity for gaining ease before a general audience. It is remembered that good public speaking is an art rather than a science, and is therefore to be learned less through knowledge of theories than by well-directed and repeated practice.

**Logic.** — In the required study of Logic during the first term of the Senior year, prominence is given to its consideration as a science. Deduction, accordingly, is chiefly studied, but not to the exclusion of Induction. Much attention is also given to such practical exercises as may cultivate accuracy and celerity of thinking. Pursuing applied logic still farther, the discussions include a full treatment of fallacies. Various recent modifications of logical doctrine and the full consideration of Induction are reserved for an elective course in the second term.

**Psychology.** — Psychology is assigned to the second term of the Junior year. Without overlooking the results of

psycho-physical investigation, the subject is chiefly studied in those manifestations of mind through consciousness which are within the observation of all. To observe these facts with care, to analyze, compare, and classify with a view to a rational explanation, is in part the method pursued. The study is regarded as the proper preparation for Philosophy, in which subsequent elective courses are offered.

**Philosophy.** — Philosophy is offered as an elective study three hours a week during the Senior year. In the first term the work is chiefly discussion of the aim and method of Philosophy, the problems that give rise to it, and the spirit in which it should be pursued. Following such introduction, the second term is given to the general or to a specific history of Philosophy, or to the study of some one system.

The course in the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times.

Lectures and criticisms in the class-room supplement the students' personal investigation.

**Ethics.** — Ethics is a required subject four hours a week during the first term of the Senior year. The course embraces the study of leading ethical theories, ancient and modern. In addition to recitations from the text-book, students conduct their own investigations, under the direction of the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of

modern ethical doctrines. The practical side of the subject is not neglected.

The course in Practical Ethics deals with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism.

**History.** — Courses 1, 2, and 3 in this department are intended to present a connected general view of political and social development, the third in the series being open only to those who have taken 1 and 2. The aim is threefold: (1) To train the student in right methods of historical study; (2) to lay a safe foundation for future specialized work; and (3) to point out the sources of such work. The essential unity of history and the constancy of human advancement will always be kept in view. In all these courses there will be lectures by the instructor and a certain amount of text-book study; but the value of independent thought and work will be kept in mind, and will be encouraged by references for parallel readings, the assignment of topics for reports by members of the class, and occasional theses. Frequent written examinations will be given. Ancient history is studied in connection with the classical languages.

History 4 is a seminary, open by permission of the instructor only to Seniors who have passed History 1 and 2 with credit, and who take History 3. The work of the seminary may lead to final honors in this department. While in the preceding courses one aim is to show the students what the best methods of historical study are, in the seminary it is intended to make each one an active historical scholar, working back always to those sources on which alone accurate historical knowledge is based. At the weekly sessions of the seminary, reports will be made of the results of their investigations by individual members, and free critical discussions will follow. Students looking toward the seminary should notify the instruc-

tor of their intention as early in the Junior year as possible.

History 5 is a study of the growth of civilization in Western Europe until the time of the Reformation, and thus exhibits the causes of modern civilization, especially in relation to Christianity. Important topics are the relations of Church and State, and the condition of the people as seen in their social life, virtues and vices, superstitions and opinions. History 6 is a continuation of History 5, also of History 1, and includes the Reformation in Germany, Switzerland, France, Holland, England; also the origins and distinctions of Christian sects, and the history of Rationalism, or the growth of free inquiry in religious affairs.

History 7 is the comparative history of non-Christian religions, ancient and modern, including those of Egypt, Babylon, and Nineveh; also Parseeism, Hinduism, Buddhism, Confucianism, and Mohammedanism. This course is designed to afford an insight into the great civilizations connected with the religions named, and thus to give in part the philosophy of history. Translations of the sacred books of the East are available in the library for constant reference.

Students intending to give especial attention to the study of history are advised to become as familiar as possible with foreign languages, particularly Latin, French, and German. A reading knowledge of French will be assumed in the history courses.

**Political Economy.** — Political Economy is required of the Seniors, including those in the engineering courses, four hours a week during the last term. The course begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows the consideration of the fundamental principles of economics. Students are as-

signed the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

**Jurisprudence.** — Law is offered as an elective to Seniors, three hours a week for a year. In the first term Ancient Law is the subject of study. The object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

**Mathematics.** — The study of Mathematics is required through the Freshman year and the first term of the Sophomore year. The branches taught are: algebra, through the subjects included in most college text-books previous to the theory of equations; solid and spherical geometry; plane and spherical trigonometry; and plane analytic geometry. Throughout the course two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly, and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

The students of all courses have an opportunity to continue algebra during the second term of the Sophomore year by the study of determinants and the theory of equations.

Analytic geometry may be carried beyond the prescribed course by the study of higher plane curves and geometry of three dimensions.

Differential and integral calculus is required for three terms in the engineering courses. This study is open as an elective to any student of the Sophomore, Junior, or Senior class.

**Physics.** — The study of Physics is begun with the consideration of mechanics in the middle of the Sophomore year, by those in the literary courses, and in the middle of the Freshman year by those in the technical courses, and is continued for a year and a half in both cases. The course consists of study and recitations. Daniell's Principles of Physics is used as a text-book; critical comments and much additional matter are added; also frequent lectures are given, with experiments. As the principles of mechanics underlie every department of physics, more time is devoted to that subject than to any other, a term being given to it alone. In connection with the text, the student is given for solution a large number of problems relating to velocity, acceleration, force, energy, simple harmonic motion, impact, friction, and gravitation.

Next to mechanics, the subjects of heat and electricity receive most attention. The aim is to present the science of Physics, not as a series of detached subjects, but rather as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch of the subject there are frequent returns to those first principles. The recent rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

During the Senior year there is offered an elective course of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note-book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

**Chemistry.** — The instruction in Chemistry begins with a course in General Chemistry, assigned to the Junior year in the classical and philosophical courses, and to the same year in the engineering courses. The instruction is given by means of lectures, laboratory work, and recitations. Lectures illustrated with experiments are given twice a week, covering the field of theoretical and descriptive inorganic chemistry. The aim of these lectures is to give the student a thorough understanding of the theories of chemistry, with a knowledge of the more important ele-

ments and their compounds. A few subjects are taken up in full, while the great mass of uncommon compounds are treated briefly. Commercial methods of manufacturing the more common substances are considered. The aim of the course is to make it practical, as a part of a liberal education. Laboratory work, four hours a week, is required of all students in General Chemistry, and this is regarded as the most important part of the course. Individual instruction is given during these hours, which are spent on experiments designed to fix on the mind of the student the theories and the descriptive matter of the lectures. Purely mechanical work is made impossible by the nature of the experiments and by the instructor's frequent personal intercourse with the student. Recitations are held every two weeks on the matter of the preceding lectures, and supplemented with monthly written examinations.

Remsen's text-books are used, more as books of reference than as text-books, the students being encouraged to take full notes of the lectures, and to rely on them. For those who may wish to pursue the subject further, elective courses are given in qualitative analysis, quantitative analysis, and organic chemistry. The first two courses, from the nature of the subject, are conducted almost wholly by means of laboratory work. The design is to give the student a complete and practical training in all the common methods of analysis, so that he may be fitted to undertake successfully any variety of analytical work. The course in Organic Chemistry consists of a series of lectures on the various classes of organic compounds, together with laboratory work, to illustrate the methods of synthesis and analysis of these compounds.

**Biology.** — The work in Biology begins with the study of Physiology, which is required of all students in the Classical and Philosophical Courses. The other biological subjects

are open to the undergraduates as electives. The course in General Biology is intended as an introduction to both Botany and Zoology, and to teach the principles of the anatomy and physiology of the living world. Both Botany and Zoology are taught as continuations of this course, while the work in Histology and Embryology is especially intended as preparatory to a medical education. These subjects are taught by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems.

The equipment of the department is good. It is furnished with microscopes, microtomes, reagents, preparations for the microscope, diagrams, as well as abundant material for illustration and dissection.

**Geology.** — The regular course in Geology is preceded by a course in Mineralogy, given during the first term of the Senior year. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals, systematically arranged in wall-cases, is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second term of the Senior year presupposes a knowledge of mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning the course practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks.

A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided, for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the course, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ*.

**Electrical Engineering.** — The practical work of the course begins in the wood-working shop, where each student is supplied with a bench and set of tools, and works under the immediate supervision of the instructor. While engaged in the forge-work of the Sophomore year and the metal-work of the Junior year, each student works under the direction of a practical machinist.

In addition to the regular physical laboratory work, engineering students are instructed in the care and management of the storage battery, engine, dynamos, and lamps. One of the senior engineers is placed in charge of the storage battery; others take turns in running the dynamos for the arc and incandescent lighting of the library, chapel, and laboratories. A large amount of work is also done in testing engines, dynamos, and motors, and in determining characteristic curves and efficiencies. Those who are skilful in the use of tools construct apparatus for the work they are engaged in, and for the general use of the laboratory. All current and potential indicators, rheostats, switch-boards, switches, keys, and cut-outs used in the dynamo-room, several of the dynamos, also many of the galvanometers, resistance-coils, and bridges used in the laboratory have been thus constructed. All wiring connected with the electric-light installation is also done by students.

During the Senior year, Thompson's Dynamo-Electric Machinery, Kapp's Electrical Transmission of Energy, and Fleming's Induction of Electric Currents are read and

fully discussed. Lectures on electrical theory, telegraphy, telephony, electro-metallurgy, wiring, systems of electrical distribution, railway work, and dynamo-designing are given, and numerous electrical problems are solved. Dynamos and motors of various types are designed, and drawings of them made, not indeed so much for the purpose of fitting students to design dynamos as to fix firmly in mind the principles underlying the construction of such machinery. Topics are assigned to be investigated or worked out, and presented to the class in the form of papers.

Before graduation each student presents a thesis on some electrical subject to which he has given special attention during the last year of his course.

**Civil Engineering.** — Instruction in Civil Engineering is conducted by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments is taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The course in Road Engineering includes study in the class-room of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating

turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The course in hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

**Physical Training.** — Beginning with 1893–94, regular exercise in the gymnasium will be required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the Senior and Junior years. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful examination, including measurements and strength tests. The special exercises of each student are directed by the instructor ; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting bar, and vaulting horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Buildings and Equipment.

## BUILDINGS.

The College buildings are: Ballou Hall, containing the recitation rooms and chemical and physical laboratories; Barnum Museum; Goddard Chapel; Goddard Gymnasium; the Library; and three dormitories, — East Hall, West Hall, and Dean Hall. Besides these, two new buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains twenty-eight thousand bound volumes and about eleven thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D.D., of Chicago. On the tables are sixty periodicals; and in the same building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access.

## MUSEUM.

The Barnum Museum of Natural History was built in 1883–1884, from a donation of the late P. T. Barnum, to whom also the College is chiefly indebted for the extensive collection of zoological specimens that has since been acquired. These cover all the grand divisions of the animal kingdom, and include in some departments many examples of rare genera and species, thus offering to the student of zoology illustrations of sufficient range to teach the relations between the lower and higher forms of animal life.

The Museum has likewise furnished a long-needed depository for the other collections — mineralogical, geological, and botanical — that have been gathered since the founding of the College, with a constant aim to acquiring a series of specimens which should be valuable in actual teaching. Of the mineralogical and geological specimens a considerable part still await classification and exhibition. Among others already displayed are systematic collections illustrating the chemical and physical properties of minerals. The botanical specimens comprise, besides a full representation of the flora of New England, numerous examples from the Southern and Western States. The total number of specimens of all kinds included in the Museum is over twenty thousand.

The laboratories and lecture rooms of the departments of Biology and Geology are also in the Museum building. Among appliances useful in practical work, the geological laboratory has instruments for making rock-sections and for polishing minerals; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals and the analysis of ores; the biological laboratory also is well supplied with the instruments needed for histological research, including a large Thoma microtome and several compound microscopes.

### GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room, for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, and includes fourteen Sargent developing machines. A running track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

### PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics.

The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electromotive force, besides a variety of instruments for accurate measurement.

### ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electronometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electrodynamometer with coils a metre in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a small alternator, a special 4,000-watt machine for experimental purposes, and a pair of 110-volt 1,500-watt machines for the Library three-wire installation, and for charging the storage battery. Three other machines are in process of construction, — one of 12 kilo-watts and 110 volts. Steam power is furnished by two Whittier tubular boilers.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting. Connected with the laboratories is a work-shop containing several lathes, with an outfit of wood and metal working tools used in the construction and repair of apparatus. Most of the rough and some of the fine apparatus used in the dynamo-room and laboratories is manufactured in this room.

### CHEMICAL LABORATORY.

The Chemical Laboratory has desks for forty-three students, and is supplied with reagent bottles, sinks, and hoods. The lighting is by electricity. The store-room contains a full stock of ordinary chemical apparatus, a full set being furnished to each student working in the laboratory. Students in the advanced courses work in the private laboratory of the professor in charge, and have access to the weighing-room, where there are accurate chemical balances for quantitative work; standard books of reference are also at hand.

# General Information.

### ADMISSION OF WOMEN.

At a meeting of the Trustees, held after the close of the last College year, it was voted to open all departments of the College to women, on the same terms as to men. Notwithstanding the lateness of the adoption of this policy, a few women have presented themselves and are now in attendance. Though no special building for their accommodation as yet exists, it is expected that a suitable dormitory will be provided before the beginning of the next College year.

### RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–1883, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but an effort is made to give variety and interest to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere. A Sunday-school is maintained in connection with Sunday worship, and students are made welcome to classes studying the Bible and subjects bearing upon the conduct of life.

The Russell Lecture, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students on the first Sunday of the College year, by either a clergyman or a layman, on a subject prescribed by the testator.

### REQUIRED AND ELECTIVE STUDIES.

The programme requires sixteen to eighteen recitations a week, or their equivalent, except in the second term of the Senior year, when thirteen are required. Two consecutive hours of work in the laboratories, or in drawing, and three hours in all other practical work, are reckoned as one programme hour. While the electives designated for each class are open primarily to the students of that class, electives designated for a lower class may also be taken, but special permission must be obtained to take an elective of a higher class. In addition to the regular electives requisite to fill out the programme, extra electives may be taken if, in the judgment of the Faculty, they can be profitably pursued. Choice of electives or optional studies for the first term must be signified in writing to the Faculty on or before the first Saturday of the College year, and for the second term, on or before the last Saturday preceding mid-year.

### SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. All applicants for special courses shall satisfy the instructors in those courses that they are prepared to pursue the same.

2. Every special student having less than fifteen programme hours a week will be required to obtain seventy per cent in each course pursued by him. This rule shall apply to the work of the term as well as to examinations.

3. Special students under rule 2 who fail in any course will be required to take that course again the next year.

4. Special students whose programme hours number fifteen or more will be treated, as regards conditions, in the same way as regular students.

5. A special student, on leaving College, shall be entitled to a certificate giving the per cent attained in each course pursued, and signed by the President and Secretary.

### TERMS AND VACATIONS.

The College year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no College exercises during a recess of two weeks at Christmas, three days at Thanksgiving, and three at Fast Day.

### EXPENSES.

The charge for instruction is one hundred dollars a year.

Students working in the laboratories are charged for certain materials used and for breakage. An extra charge, not exceeding $30.00 for the entire course, is made to engineering students, to cover cost of instruction in shop-work. Any damage done by students to College property is charged in the term bills. Students board in commons at $3.50 per week; in private families at $3.50 to $5.00. Other expenses vary with the economy of each student. Students furnish their own rooms.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition . . . . . | $100.00 | $100.00 |
| Gymnasium . . . . . | 4.00 | 4.00 |
| Half room-rent, with care . . . . . | 15.00 | 75.00 |
| Board, $3.50 to $5 00 a week (36 weeks) | 126.00 | 180.00 |
| Total . . . . . | $245.00 | $359.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships and other aids must be made to the Faculty on or before the first day of November; and if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

The following scholarships, of one hundred dollars each, are awarded annually: —

THREE STATE SCHOLARSHIPS, — Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS, — Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS, — Established in honor of the late William J. Walker, M.D., of Newport, R.I., and payable from the income of the Walker Fund.

FOUR PRIZE SCHOLARSHIPS OF NATURAL HISTORY, — Olmstead, Leavenworth, Miner, Tully, from funds contributed by the late Charles Hyde Olmstead, of Hartford, Conn.

TWO MOSES DAY SCHOLARSHIPS, — Founded by the late Moses Day of Roxbury.

THE A. A. MINER SCHOLARSHIPS, — Founded by A. A. Miner, D.D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP, — Founded by the late Charles Robinson, LL.D., of Newton.

THE PATTERSON SCHOLARSHIP, — Founded by A. J. Patterson, D.D., of Roxbury, in the name of A. J. and Jane L. Patterson.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP, — Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP, — Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP, — Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP, — Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP, — Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP, — Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP, — Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE HANNAH L. WHITING SCHOLARSHIP, — Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP, — Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP, — Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP, — Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP, — Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP, — Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP, — Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP, — Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP, — Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP, — Founded by friends of the late E. H. Chapin, D.D., in New York city.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU 2d MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP, — Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP, — Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP, — Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE J. D. PEIRCE SCHOLARSHIP, — Founded by the children and other relatives of the late J. D. Peirce, D.D., of Attleboro.

OLNEY ARNOLD, of Pawtucket, R. I., and ISAAC P. T. EDMANDS, of Boston, each pay one hundred dollars annually for a term of years.

The following UNIVERSALIST PARISHES have provided for annual payments of one hundred dollars each: —

Newton, Boston (Columbus Avenue), Somerville (Cross Street), Roxbury, Augusta (Maine), North Attleboro.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D.D., of Boston.

THE PERKINS SCHOLARSHIP, — Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

APPOINTMENTS. — The pay of a monitor is *twenty dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES. — In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the Sophomore class, of the seventeenth and eighteenth sections of Chapter xxxiv. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the Freshman year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers of the Senior class.

Two prizes, of *twenty* and *ten dollars* respectively, to members of the Junior class, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to members of the Sophomore class.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class who shall have complied with the following conditions: —

In two years preceding graduation, —

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.

2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.

3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

Subjects are open for Honors as follows: —

I, Latin; II, Greek; III, English; IV, German; V, French; VI, Philosophy; VII, History; VIII, Mathematics; IX, Physics; X, Chemistry; XI, Biology; XII, Electricity; XIII, Civil Engineering.

SECOND YEAR HONORS will be conferred at the end of the Sophomore year on any member of the class who in the two years preceding shall have attained Grade A in the required work of the subject in which he desires honors, and also in the equivalent of three hours a week for one term in elective work in the same subject.

Subjects open for the Second Year Honors are, —

I, Latin; II, Greek; III, Mathematics; IV, German; V, French; VI, Modern Languages (German *or* French in Course II, and in Philosophical Course; Modern Languages in Course I).

A student is expected to apply for Final Honors as early as the middle of his Junior year, and may make up his standing in any study in which he is deficient. The grade of Honors, as well as the department, will be mentioned in the diploma and printed in the Catalogue. Special requirements may be made in any department.

HONORABLE MENTION will be made in the Commencement programme and in the Annual Catalogue of a student who has attained Grade A or B in a subject to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have completed the Classical Course in a satisfactory manner.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have completed the Philosophical Course under the same conditions.

THE DEGREE OF BACHELOR OF CIVIL ENGINEERING, or of BACHELOR OF ELECTRICAL ENGINEERING, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the Classical and Philosophical Courses may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Civil Engineering or of Electrical Engineering after a graduate course of one year in the Engineering department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, and ELECTRICAL ENGINEER, see Graduate Department, page 87.

# Graduate Department.

## EXECUTIVE BOARD OF THE FACULTY OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D.D., *President.*
HEMAN A. DEARBORN, A.M.
WILLIAM G. TOUSEY, A.M., B.D.
AMOS E. DOLBEAR, M.E., Ph.D.
GEORGE T. KNIGHT, A.M., D.D., *Secretary.*
ARTHUR M. COMEY, A.M., Ph.D.
J. STERLING KINGSLEY, S.D.

## STUDENTS.

### Candidates for the Degree of Master of Arts.

ARNOLD, GEORGE ALLEN, '92 . . . . . *College Hill.*
Subject — *Biology.*

BATEMAN, FRANK ELLIOTT, '87 . . . . . *Boston.*
Subjects — *History and Natural History.*

HATHAWAY, CHARLES AUGUSTUS, '90 . . . . . *Stamford, Conn.*
Subject — *Geology.*

MCCOLLESTER, LEE SULLIVAN, '81 . . . . . *Detroit, Mich.*
Subject — *Church History.*

NEWTON, ELBRIDGE WARD, '90 . . . . . *Newmarket, N. H.*
Subjects — *English Literature and History.*

PROUTY, WILLIS JAMES, '87 . . . . . *Meriden, Conn.*
Subject — *Latin.*

STONE, HENRY BEECHER, '86 . . . . . *College Hill.*
Subject — *Physics.*

TOWLE, GEORGE GILMAN, '91 . . . . . *Dover, N. H.*
Subjects — *Greek and Latin.*

TUTTLE, HIRAM AUSTIN, '91. . . . . *Barre, Vt.*
Subject — *Classical Philology.*

### Candidate for the Degree of Civil Engineer.

KENNEDY, ALFRED WARREN, '92 . . . . . *South Medford.*
Subjects — *Mechanics and Railroads.*

## INSTRUCTION

Instruction in the Graduate Department is given by the Professors of the College of Letters and of the Divinity School, but regular courses of instruction have not as yet been arranged. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of A. M. on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged with the instructor in whose department the work is to be done.

The degrees offered by this department are Master of Arts, Civil Engineer, Electrical Engineer, and Doctor of Philosophy.

## DEGREES.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College, or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of A. B. or Ph. B., who shall complete an approved course of advanced study in one, or at the most two, departments, during a residence of not less than one year, and shall prepare a thesis and pass a satisfactory examination upon the work performed.

Candidates for this degree must make a written application to the Executive Board of the Faculty of the Graduate Department before October 1st of the College year in which the degree is to be conferred, and if the degree is not taken after one year's study, they must also give a second notice three months before receiving the degree. The condition of residence may be waived by special permission, but in this case the degree may not be taken with less than two years' graduate study.

The tuition fee for the whole course is *one hundred dollars*, of which *fifty dollars* is payable in advance for non-residents.

THE DEGREE OF CIVIL ENGINEER OR ELECTRICAL ENGINEER will be conferred upon Bachelors of Civil or Electrical Engineering who shall satisfactorily pursue advanced professional study at the College for one year and present a thesis; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility. A certain amount of professional study will be assumed, upon which a thesis shall be presented. The regulations concerning application for this degree are the same as for the degree of A.M.

The tuition fee for resident students is *one hundred dollars*.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainments are necessary, and especially the power of original thought and independent investigation. The whole course of study must at present be devoted to one subject, and a thesis must be presented which shall give evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF A.M. may be taken by candidates for the degree of Ph.D. at the end of their first year's study, or will be conferred together with the latter degree.

The tuition fee for this course is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance.

Two departments only are open at present to candidates for this degree, — Biology and Chemistry.

In Biology, candidates for the Degree of Ph.D. must have a good working knowledge of French and German before beginning their work; they must carry on research in Animal Morphology for at least two years in the College Laboratory, and at least one summer at some sea-shore station; they must present an acceptable thesis, based upon the work done, and must pass an examination upon General Zoology.

In Chemistry, candidates for the Degree of Ph.D. must be able to translate scientific German readily and accurately before beginning their work; they must also have completed a preliminary course in Organic Chemistry (Chemistry 6) with distinction; they must carry on research for at least two years in the College Laboratory in Inorganic or Organic Chemistry; they must present a satisfactory thesis on this work; and also pass an examination upon Theoretical Chemistry.

# DIVINITY SCHOOL.

# Faculty of the Divinity School.

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ELMER H. CAPEN, D.D., *President.*
THOMAS J. SAWYER, D.D., *Emeritus.*
CHARLES H. LEONARD, D.D., *Dean.*
WILLIAM G. TOUSEY, A.M., B.D.
GEORGE T. KNIGHT, A.M., D.D., *Secretary.*
GEORGE M. HARMON, A.M., B.D.
ANSON B. CURTIS, PH. D.
DAVID L. MAULSBY, A.M.

---

HENRY I. CUSHMAN, D.D.
DAVID GORDON LYON, PH. D.

# Students.

## Resident Graduates.

| | | |
|---|---|---|
| Eastman, John Putney, B.D. | *West Somerville* | 205 Holland St. |
| Maxham, Herbert Olin, A.M., B.D. | *Medford* | 3 Marshall St. |

## Senior Class.

| | | |
|---|---|---|
| Gifford, Franklin Kent, A.B. (Harvard.) | *Somerville* | 359 Beacon St. |
| Markley, Howard Anthony | *Philadelphia, Pa.* | Paige Hall, 19. |
| Maxwell, Harley Davidson | *Moore's Mills, N. B.* | 9 St. Charles St., Boston. |
| Moore, Leslie | *Somerville* | Paige Hall, 18. |

## Middle Class.

| | | |
|---|---|---|
| Ball, Clarence Leon | *Cambridge* | Paige Hall, 5. |
| Ballou, Willard Stephen | *Hopbottom, Pa.* | Paige Hall, 13. |
| Brown, Allen | *Cadillac, Mich.* | Paige Hall, 12. |
| Butler, Thomas | *Philadelphia, Pa.* | Paige Hall, 29. |
| Dickins, Curtis Hoyt | *Philadelphia, Pa.* | Paige Hall, 31. |
| Foster, Augustine Norwood | *Meriden, Conn.* | Paige Hall, 20. |
| Grose, Arthur Wilder, A.B. | *Abington* | Paige Hall, 6. |
| Hoyt, Hervey Hastings | *Peabody, Kansas* | Paige Hall, 17. |
| Leighton, George Edward | *Dexter, Me.* | Paige Hall, 8. |
| Morrison, Ira Daniel | *Brookings, So. Dak.* | Paige Hall, 30. |
| Perkins, Frederic Williams, A.B. | *Roxbury* | Paige Hall, 7. |
| Petrie, Omer Genere | *El Dorado, Ohio* | Paige Hall, 15. |

## Junior Class.

| | | |
|---|---|---|
| Andrus, Elmer Charles | *Grand Rapids, Mich.* | Paige Hall, 22. |
| Blair, Arthur Adolphus | *Manchester, N. H.* | Paige Hall, 23. |
| Cambridge, Charles Henry, A.B. | *Grafton, Vt.* | Paige Hall, 4. |
| Cardall, Alfred James | *Bay City, Mich.* | Paige Hall, 24. |
| Cobb, Joseph Fernald, A.B. | *Deering, Me.* | Paige Hall, 11. |

| | | |
|---|---|---|
| Roscoe, Tom, M.D. (Vt. Med. Coll.) | *Somerville* | 178 Central St. |
| Smith, Ashley Auburn | *Auburn, Me.* | Paige Hall, 1. |
| Tillinghast, James Dannals | *Buffalo, N. Y.* | Paige Hall, 36. |
| Welch, Charles DeMerritt | *Lynn* | Absent. |
| Wells, Charles Henry | *Barre, Vt.* | Paige Hall, 34. |
| Williams, Loring George, A.B. | *Nottingham, N. H.* | Paige Hall, 32. |
| Whitcomb, Walter Rodney, A.B. (Dartmouth.) | *Belchertown* | Paige Hall, 9. |

### Sub-Junior Class.

| | | |
|---|---|---|
| Bennett, Edward Day | *Valparaiso, Ind.* | Paige Hall, 25. |
| Blackford, Frank, B.S. (Nat. Norm. Univ.) | *El Dorado, Ohio* | Paige Hall, 27. |
| Dickerson, Jesse Clifford | *Detroit, Mich.* | Paige Hall, 14. |
| Eddy, Frank Fay | *Charlotte, Mich.* | Paige Hall, 35. |
| Fischer, Theodore Adolph. | *Meriden, Conn.* | Paige Hall, 33. |
| Taylor, Henry Butterfield | *Buffalo, N. Y.* | Paige Hall, 21. |
| Ward, Charles Merrill | *Brattleboro, Vt.* | Paige Hall, 3. |
| Wilson, John Harner | *Philadelphia, Pa.* | Paige Hall, 28. |
| Brooks, Angie Maye | *Portland, Me.* | 31 George St., Medford. |

### Special Students.

| | | |
|---|---|---|
| Blackford, Alfred Newton | *El Dorado, Ohio* | Paige Hall, 16. |
| Henry, Carl French, B.S. (Buchtel.) | *Geauga Lake, Ohio* | Paige Hall, 10. |
| Rice, George Damon | *Medford* | 152 Boston Ave. |
| Hickok, Eliza Mary | *Somerville* | 45 Everett Ave. |
| MacCoy, Mabel Lilla | *New York, N. Y.* | 31 George St., Medford. |

### SUMMARY.

| | |
|---|---|
| Resident Graduates | 2 |
| Senior Class | 4 |
| Middle Class | 12 |
| Junior Class | 12 |
| Sub-Junior Class | 9 |
| Special Students | 5 |
| | 44 |

# Admission to the Theological Course.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to the Junior Class without examination. Candidates for the Four-Years Course are examined in some one of the Greek classics or in the Greek of the Gospels, and in the English studies usually pursued in high schools.

Applicants may be admitted to the School for any period of not less than one year. Those applying for admission to advanced standing are examined in the studies which have been pursued by the class they propose to enter.

It is earnestly recommended that all who are contemplating a course of theology should take, as preliminary, a full collegiate course of study. The call is for men of liberal culture, and academic discipline is of great value as a preparation for professional studies. It has not been thought expedient, however, to make such a requirement, for it has been found that earnest and capable men aspire to the Christian ministry whose circumstances forbid so extensive preparation. To meet the wants of such, and yet provide for thorough and comprehensive development, a four-years course has been instituted.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week for the first term.* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week for the second term.* PROFESSOR TOUSEY

**Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes. *Three hours a week for one third of the year.* PROFESSOR LEONARD

**Old Testament.** — Hebrew History. *Four hours a week.* DR. CURTIS.

**Oratory.** — Practical Exercises in the reading of Scripture and Hymns. *One hour a week.* PROFESSOR MAULSBY.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week for the first term.* PROFESSOR TOUSEY.

**Old Testament.** — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism; History of Hebrew Religion. *Four hours a week.* DR. CURTIS.

**New Testament.** — Hermeneutics; Criticism; Exegesis of Matthew's Gospel, with parallel and supplemental passages from the other Synoptics; The Life of Christ; Theology of the Synoptic Gospels. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week.* PROFESSOR KNIGHT

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletical Analysis. *Two hours a week for two thirds of the year.* PROFESSOR LEONARD.

**Oratory.** — Practice in the reading of Scripture, Hymns, and Sermon-literature. *One hour a week.* PROFESSOR MAULSBY.

## MIDDLE CLASS.

**Old Testament.** — Old Testament Introduction, Theology, and Sociology. *Two hours a week.* DR. CURTIS.

**New Testament.** — Criticism and Exegesis of the Fourth Gospel; Johannine Theology. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics. *Three hours a week for the year.* PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week for the first term, and three for the second term.* PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.* PROFESSOR LEONARD.

## SENIOR CLASS.

**New Testament.** — Criticism and Exegesis of Selected Passages from Romans, 1 Corinthians, and Hebrews; Pauline Theology. *Two hours a week for two thirds of the year.* PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week for the first third of the year.* PROFESSOR KNIGHT.

**Natural Theology.** — Theistic Arguments; Special Studies with reference to the Evidences of Final Causes in Nature; Science and Religion. *Three hours a week.* PROFESSOR TOUSEY.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Four hours a week for the second half year.* PRESIDENT CAPEN.

**Homiletics.** — Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.* PROFESSOR LEONARD.

**Pastoral Care.** — Personal Qualifications and Duties of the Pastor; the Administration of Religion in General; Organized Work in the Parish. *Three hours a week for the second term.* PROFESSOR LEONARD.

# Departments of Instruction.

**Psychology.** — The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**Rhetoric.** — The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the chapters which deal with the art of constructing discourse, and with the methods of applying the principles of rhetoric in actual literary work.

**Old Testament.** — **I. Hebrew**: The aim is to give the student such a working knowledge of the Hebrew language as will enable him sympathetically to study the religious life of the Jewish people.

The first part of the year is devoted to the grammar and the vocabulary of the more common words, and to the reading of easy prose. As soon as possible some exegetical and critical work is added, in which an effort is made to ascertain the dates and contents of the first six books of the Old Testament.

A portion of the year is devoted to a brief survey of Jewish history and religion as reconstructed by the latest authorities, chiefly with a view to acquaint the students with the questions at issue.

The method of work is largely inductive, and involves lectures, discussions, recitations, and occasional examinations.

The text-books used are Bissell's Practical Hebrew Grammar, the Hebrew Old Testament, and Toy's History of the Religion of Israel.

**II. Hebrew History**: This course is not required of those who take the Hebrew language. The entire Old Testament is read during the year, with the Revised Version as the text-book. The aim is to give the student a comprehensive view of Hebrew history from the earliest times to the close of the canon. Each reading-lesson is followed by a lecture in explanation of the difficult passages, emphasizing the salient features of the history.

The method includes extempore essays, written during the last ten minutes of the recitation-hour, upon some subject contained in the lesson.

Books of reference suggested for additional reading are Stanley's Lectures on the Jewish Church, Renan's History of the People of Israel, The Bible for Learners, Toy's History of the Religion of Israel.

**III. Old Testament Introduction and Theology**: The aim of the course is to ascertain the authorship, date, purpose, and contents of each book of the Old Testament, and the time of its introduction into the canon. The text-books are, Driver's Introduction, and Smith's Old Testament in the Jewish Church. These books are then taken as the basis of inquiry into the moral, religious, and social ideas of the epoch. Additional readings are assigned in Smith's Religion of the Semites, Kuenen's Religion of Israel, and Toy's Judaism and Christianity; and this study of authorities is supplemented with lectures, essays, recitations, and discussions. An attempt is also made to connect the study with the practical questions of the day.

**New Testament.** — The origin, contents, and history of the New Testament writings are first considered, together with the history of the canon during the first two centuries, and the historical and archæological problems involved; the aim being to make the student intelligent as to the leading questions in New Testament criticism, and to form in him the habit of critical judgment. The method pursued is to deal with these questions as they naturally arise in the exegesis. Topics are assigned, and references given to the leading authorities, by means of which the student is enabled to compare and contrast differing opinions, and arrive at his own conclusions. This work is supplemented with notes from the professor, and written examinations are held at convenient intervals.

The exegetical study of the class includes the life of Christ from the Synoptic Gospels, the teaching of the Fourth Gospel, and selected passages from Romans and First Corinthians.

The principles of interpretation are given to the class in notes, and the students are required to apply them to the passages read, to discover the main points to be interpreted, without recourse to commentaries, and to deal with these principal points in accordance with approved exegetical methods. Later in the course the class is taught the right use of commentaries.

The course also includes a study of New Testament Theology which covers the doctrines of Christ contained in the Synoptic Gospels, the Johannine theology, and the doctrinal system of Paul. The aim is to discover the main lines of thought stated and directly involved, and their relations to each other. The results of the study appear in the interpretation of the New Testament writings as they are read by the class.

Reference is made to the following authorities: Schürer, Westcott, Weiss, Reuss, Edersheim, Ewald, Davidson, Abbott, Lardner, Fisher, Keim, De Wette, Meyer, Lange, Olshausen, Alford, Godet, Ellicott, Luthardt, Delitzsch, and Schmid.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. Also he is constantly instructed and inspired by the story of the great and good who have made the Church what it is. And in general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its Rela-

tions to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States; and lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog, and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.** — The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of

the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Laou-tsze, Zoroaster, and Mohammed.

The topics noted are: The Deity; the Forms and Meaning of Worship; the Condition of the People, industrial, intellectual, and moral; and the Power of each Religion for the Elevation of the Human Race.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.** — Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the

fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Natural Theology.** — The various modes of the theistic argument are reviewed, their grounds scrutinized, and their logical value carefully discussed. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures, and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science, and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.** — The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the sources of theological material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions, — the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional subdivisions will be noted historically, but will be accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand,

or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems, — ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in homiletics covers two thirds of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Helps in Sermon-Preparation, Modes of Development, Style in Spoken Discourse, the Invention and Arrangement of

Material, Illustrations and Use of Anecdote, Personality in Preaching, Character and Preaching.

**Pastoral Theology.** — Historic basis is found for this particular study in the Apostolic Church, — its organization, polity, and methods of work, — and in the instituted life of modern churches, Prelatical, Presbyterian, Congregational; and results reached are considered with reference to the government and methods of the Universalist Church.

The course further provides for the discussion of the spiritual, mental, and social qualifications of the pastor; the study of the forms, and conduct of public worship; the practical illustration of pastoral oversight and visitation, the methods of building and uniting a parish, and the theories of church-work in Sunday-schools, missions, charities; the study of modern social and industrial problems; and lectures upon the official duties of the Christian minister.

From year to year the course in Pastoral Theology is supplemented with special lectures from clergymen who are engaged in the active work of the ministry.

**Oratory.** — The object of the instruction in the department of Oratory is to gain a natural as well as reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the class exercises consist of actual practice in reading selected hymns and portions of the Scriptures, with the preaching, in the advanced division, of parts of sermons. The work done is followed by criticism and suggestion from the instructor and the class.

# General Information.

### RELIGIOUS EXERCISES.

Devotional services, conducted by the Professors and the Students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

### EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

### LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

### ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty.

### GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

### GYMNASTICS.

At least two years' work in the Gymnasium is ordinarily required of all students. Provision is made for continuing such work according to individual needs.

### COURSES OF STUDY AND DEGREES.

THE FULL COURSE for Bachelors of Arts occupies three years; for all others, four years. A special course of one, two, or three years may be taken.

THE DEGREE OF BACHELOR OF DIVINITY is conferred upon college graduates who pass satisfactorily an examination in the studies of the Three-Years Course, and upon others who complete the Four-Years Course with distinction.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B.D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges whose courses of study have been equivalent to the course for which the degree of A.B. is given by Tufts College.

Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

### ROOMS AND EXPENSES.

The rooms in the new dormitory (Paige Hall) are neatly and amply furnished, heated by steam, and lighted by gas. The only necessary articles to be provided by the student are sheets, pillow-cases, blankets, and towels.

The necessary school expenses, including board, washing, light, steam-heat, and care of room (twenty dollars), and gymnasium charges (four dollars), do not exceed two hundred and twenty-five dollars a year.

The General Convention of Universalists aids students by a system of loans; and those in the regular course who have shown sufficient maturity are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

### NEW BUILDINGS.

The new buildings for the use of the Divinity School are now ready for occupancy. Miner Theological Hall, the gift of ex-President Miner, contains eight large lecture-rooms, and a special room for the meetings of the Faculty. Until distinct buildings are provided for the purposes, two of the lecture-rooms will be used for the Historical and Reference Libraries, and for the religious services of the School. A third room is furnished as a Parlor or Reception Room, in honor of Mrs. Miner, to be known as the Maria Miner Reception Room.

Paige Hall, the new dormitory, contains thirty-six rooms, affording a separate apartment for each student.

### SCHOLARSHIPS, ETC.

THE GREENWOOD SCHOLARSHIP. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of

the Divinity School for excellence in the department of Oratory.

Rev. W. S. PERKINS, D.D., of Meriden, Conn., provides for an annual prize of twenty-five dollars to encourage extemporaneous preaching.

THE DOCKSTADER SCHOLARSHIPS. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

THE WOODBRIDGE SCHOLARSHIP. — The income of two thousand dollars, given by Samuel F. Woodbridge, of Cambridge, Mass., is appropriated for the benefit of the Divinity School.

The income of the VANNEVAR FUND is used in the purchase of books for the Department of Homiletics.

## DEGREES CONFERRED AT THE THIRTY-SIXTH ANNUAL COMMENCEMENT, JUNE 15, 1892.

### Honorary Degrees.

**A.M.**

SANFORD PERRY RECORD.

**D.D.**

JOSEPH SMITH DODGE, JR.

**Ph.D.**

CHARLES MORRISON JORDAN, A.B.

### Degrees in Course.

**A.M.**

HARRY BLACKFORD, B.D., 1892.
WILLIAM BEST EDDY, B.D., 1892.
HERBERT OLIN MAXHAM, B.D., 1892.

**A.B.**

MARO SPAULDING BROOKS.
HORACE CHOATE CARTER.
JOSEPH FERNALD COBB.
WENTWORTH ROSCOE LIBBY.
FRED DOW LYON.
EDWARD EVERETT MARGGRAF.
FRANK ALLEN NORTH.
HENRY JOSEPH PERRY.
ARTHUR EVERETT PETERSON.
ARTHUR GILE RANDALL.
LORING GEORGE WILLIAMS.

**Ph.B.**

GEORGE ALLEN ARNOLD.
WILLIAM SOUTHWICK GRAY.
MELVIN MAYNARD JOHNSON.
FRED ELBERT KIMBALL.
CHARLES AUSTIN WILLIS.
DWIGHT FLETCHER WILLIS.

**A.M.B.**

WOOSTER BLAKE CURTISS.
FRANCIS HATHAWAY DOANE.
HOWARD LINCOLN EDSON.
WILLIAM SOUTHWICK GRAY.
JOSEPH HARDWICK.
JOHN MURRAY HOLLISTER.
FREDERICK WILLIAM HOSFORD.
EDWARD JARVIS HUNT.
ALFRED WARREN KENNEDY.
HENRY SUMNER SWAIN.
ALBERT OLIVER THAYER.
LOUIS MELVIN WILSON.

**B.D.**

ANTHONY BILKOVSKY.
HARRY BLACKFORD.
RALPH EVERETT CONNER.
WILLIAM BEST EDDY.
CHARLES PRIEST HALL.
JOSEPH FRANK HAMMOND.
HERBERT OLIN MAXHAM.
HERBERT FRANK MOULTON.
JOHN AUGUSTUS SAYLES.

## HONORS AWARDED AT THE THIRTY-SIXTH ANNUAL COMMENCEMENT.

**Classics.**

ARTHUR EVERETT PETERSON.

**Modern Languages.**

MARO SPAULDING BROOKS.

**Chemistry.**

HENRY JOSEPH PERRY.

**Honorable Mention.**

GEORGE ALLEN ARNOLD, *Modern Languages.*
FRANK ALLEN NORTH, *Philosophy.*
ARTHUR GILE RANDALL, *Natural History.*

## AWARDS OF PRIZES, 1891-92.

**Goddard Prize in Greek.**

ARTHUR EVERETT PETERSON, of the Senior Class.

**Goddard Prize in Latin.**

CHARLES ST. CLAIR WADE, of the Sophomore Class.

**Special Prize in Greek Drama.**

CHARLES ST. CLAIR WADE, of the Sophomore Class.

**Special Prize in Greek History.**

HARRY CHARLES FOLSOM, of the Freshman Class.

**Goddard Prize in Mathematics.**

EDWARD CHANNING CRAIG, of the Freshman Class.

**Olmstead Prize Scholarship in Natural History.**

HENRY JOSEPH PERRY, of the Senior Class.

**Greenwood Prize Scholarship in Oratory.**

WILLIAM SOUTHWICK GRAY, of the Senior Class.

**Rhetorical Prizes.**

MARO SPAULDING BROOKS, WILLIAM SOUTHWICK GRAY, and FRANK ALLEN NORTH, of the Senior Class; WILLARD SHEPARD MARTIN, of the Junior Class; THOMAS WHITTEMORE and FRED CROSBY HODGDON, of the Sophomore Class.

**Greenwood Prize Scholarships of Oratory in the Divinity School.**

WILLIAM BEST EDDY, FREDERIC WILLIAMS PERKINS, and CARL FRENCH HENRY.

**Perkins Prize for Extemporaneous Preaching in the Divinity School.**

RALPH EVERETT CONNER and HERBERT OLIN MAXHAM.

## ENTRANCE EXAMINATION PRIZES, 1892-93

First Prize — WILLIAM ERNEST MCLAINE.
Second Prize — EDWARD WYMAN FICKETT.

# CATALOGUE

OF

# TUFTS COLLEGE.

## 1893-94.

# CATALOGUE

OF

# TUFTS COLLEGE

1893-94

BOSTON
H. G. COLLINS, 15 MILTON PLACE
1894

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# Calendar.

1893.

Oct. 5. College year begins, Thursday morning.

Oct. 8. Russell Lecture, Sunday, 3 P. M.

Nov. 1. Limit of time for applying for Scholarships.

Dec. 20. Christmas recess begins, Wednesday evening.

1894.

Jan. 3. Christmas Recess ends, Wednesday evening.

Feb. 5. Mid-year examination week begins, Monday.

Feb. 10. End of first half-year, Saturday. Plans of study for the second half-year must be reported before noon of this day.

Feb. 12. Second half-year begins, Monday.

May 29. Prize Reading in the College of Letters.

June 5. Prize Reading in the Divinity School.

June 15. Class Day, Friday.

June 17. Baccalaureate Sermon, Sunday, 3 P. M.

June 20. Commencement, Wednesday.

*First Examinations for Admission to College of Letters.*

June 21. Elementary Mathematics, English, and History.

June 22. Latin, Greek, Science, and Advanced (Engineers') Mathematics.

June 23. German and French.

(Examinations begin at 9 A. M. on each day.)

SUMMER VACATION, THIRTEEN WEEKS.

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*Second Examinations for Admission to College of Letters.*

SEPT. 18. Elementary Mathematics, English, and History.

SEPT. 19. Latin, Greek, Science, and Advanced (Engineers') Mathematics.

SEPT. 20. German and French.

(Examinations begin at 9 A. M. on each day.)

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SEPT. 20. College Year begins, Thursday morning.
Registration of all students at Secretary's office.
Major subjects and plans of study for the first half-year must be reported before noon of this day.

SEPT. 22. Regular College exercises begin.

SEPT. 23. Russell Lecture, Sunday, 3 P. M.

DEC. 19. Christmas Recess begins, Wednesday evening.

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TUFTS COLLEGE is situated at College Hill, four miles from Boston, on the Lowell division of the Boston & Maine Railroad. The postoffice address is — TUFTS COLLEGE, MASS.

# Tufts College.

TUFTS COLLEGE owes its inception immediately to an effort, under the direction of the Rev. OTIS A. SKINNER of Boston, to raise one hundred thousand dollars for its foundation. About sixty thousand dollars was obtained in money. The subscription was completed by SYLVANUS PACKARD giving his bond for twenty thousand dollars, and by CHARLES TUFTS making a donation of twenty acres of land, embracing the present site of the College. The latter announced his intention to increase his gift of land to more than one hundred acres, and thus became the largest benefactor at the start. It was determined, therefore, that the institution should receive his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were OLIVER DEAN, who gave it ninety thousand dollars, and THOMAS A. GODDARD, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. WILLIAM J. WALKER came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

The charter under which, with slight changes, the College has been developed was granted April 21, 1852. Students were first formally admitted in 1855. The first class, consisting of three members, was graduated in 1857. At the outset, provision was made only for a course of study leading to the degree of Bachelor of Arts; but some unclassified students were always in attendance. It seemed desirable, therefore, to lay out courses for those who had been prepared only in English subjects. In 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course

covering two years. This course continued until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, for which an entrance requirement, believed to be fully the equivalent of the Greek, is demanded in two modern languages. A department of Civil Engineering was organized in 1869, and opportunity was offered for instruction in the branches pertaining to that subject. A course of study in Electrical Engineering was opened to students in 1883, and a professorship of the subject was established in 1890. The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. THOMAS J. SAWYER, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1883 the late PHINEAS T. BARNUM gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The first President was the Rev. HOSEA BALLOU 2d, D. D., who held office from the opening of the College until his death in 1861. His successor, the Rev. ALONZO AMES MINER, D.D., LL. D., was inaugurated in 1862, and continued in office until his resignation in February, 1875. The present incumbent was chosen in March of the same year.

In the summer of 1892 the College was by vote of the Trustees opened in all its departments to women on the same terms as to men. In the summer of 1893 it was decided to open the Tufts College Medical School. The Bromfield-Pearson school for technical instruction was opened in the fall of 1894 in a thoroughly equipped building, erected for the school from the fund bequeathed by the late HENRY B. PEARSON. Thus the best facilities for practical work were provided for students in the technical courses of the College.

# The College Charter.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age, or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the trustees to convene at such meetings, and also, from time to time to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the constitution and laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College, in such manner as shall most effectually promote virtue and piety, and learning in such of the languages, and of the liberal and useful arts, and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government, that pecuniary aid shall hereafter be granted to the College.

# Trustees.

JOHN D. W. JOY.
ALONZO A. MINER, D. D., LL. D.
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*Professor of Civil and Mechanical Engineering.*

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*Wade Professor of Modern Languages.*

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*Professor of Ethics and Philosophy of Theism.*

AMOS E. DOLBEAR, M. E., PH. D., 134 Professors Row.
*Professor of Physics and Astronomy.*

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*Professor of Electrical Engineering.*

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*Professor of Church History.*

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*Professor of Biblical Theology.*

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*Professor of English Literature and Oratory.*

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*Professor of Biology.*

FRANK P. GRAVES, A. M., PH. D., 106 Professors Row.
*Professor of Classical Philology.*

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*Professor of General Descriptive and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WILLIAM R. CHIPMAN, A. B., M. D., Chelsea.
*Professor of the Principles and Practice of Surgery and Operative Surgery.*

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*Professor of the Principles and Practice of Medicine and Clinical Medicine.*

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*Professor of Obstetrics and Gynæcology.*

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*Professor of Materia Medica and Therapeutics.*

GARDNER C. ANTHONY, A. M., The Woodbridge,
*Professor of Technical Drawing.* West Somerville.

*ARTHUR MICHAEL, A. M., PH. D.,
*Professor of Chemistry.*

*WARREN S. WOODBRIDGE, A. B., B. D., Medford.
*Woodbridge Professor of Applied Christianity.*

*Absent for the present year.

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*Instructor in Hebrew.*

FRANK W. DURKEE, A. M., West Hall, 5.
*Instructor in Chemistry and Physical Training.*

FRANK E. SANBORN, S. B., West Hall, 20.
*Walker Special Instructor in Mathematics.*

EDWIN A. START, A. M., Talbot Avenue.
*Instructor in History.*

LEO R. LEWIS, A. M., 20 Professors Row.
*Instructor in French.*

FRANK T. DANIELS, A. M. B., 32 Summit Avenue,
*Instructor in Civil Engineering.* W. Somerville.

HORATIO W. MYRICK, A. M. B., 54 Curtis Street.
*Instructor in Electrical Engineering.*

CHARLES D. KNOWLTON, M. D., Boston.
*Demonstrator of Anatomy.*

RICHARD M. PEARCE, Boston.
*Demonstrator of Physiology.*

FRED S. RADDIN, M. D., Chelsea.
*Assistant in Surgery.*

WILLIAM A. WHITE, M. D., Boston.
*Assistant in Theory and Practice of Medicine.*

EDWARD E. THORPE, M. D., Boston.
*Assistant in Medical Chemistry.*

CHARLES L. CUTLER, M. D., Charlestown.
*Assistant in Gynæcology.*

FRANK B. BROWN, M. D., Dorchester.
*Assistant in Pathology.*

ALBERT E. ROGERS, M. D., Dorchester.
*Assistant in Materia Medica.*

WILLIAM H. DETWYLER, PH. B., 65 Curtis Street.
*Tutor in French.*

HUBERT C. FOSS, Dean Hall, 6.
*Assistant in Physical Training.*

GEORGE H. FURBISH,
*Teacher of Woodwork and Foundry Work.*

FRANK G. WREN, Dean Hall, 6.
*Tutor in Mathematics.*

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### Medical School.

ARTHUR E. AUSTIN, A. B., M. D., Dorchester.
*Lecturer on Medical Chemistry.*

JOHN A. TENNEY, M. D., Boston.
*Lecturer on Ophthalmology and Otology.*

SAMUEL G. WEBBER, A. B., M. D., Boston.
*Lecturer on Neurology.*

CHARLES A. PITKIN, A. M., PH. D., South Braintree.
*Lecturer on General Chemistry.*

GEORGE F. EAMES, M. D., D. M. D., Boston.
*Lecturer on Laryngology.*

THOMAS M. DURELL, M. D., Somerville.
*Lecturer on Medical Jurisprudence.*

J. CUSHING GALLISON, M. D., Franklin.
*Lecturer on Genito-Urinary Surgery.*

J. STERLING KINGSLEY, S. D., 128 Professors' Row.
*Lecturer on Histology.*

WILLIAM R. WOODBURY, A. B., M. D., Boston.
*Lecturer on Hygiene.*

WILLIAM A. WHITE, M. D., Boston.
*Lecturer on Diseases of Children.*

### Divinity School.

HENRY I. CUSHMAN, D. D., Providence, R. I.
*Lecturer on Methods of Biblical Study.*

DAVID G. LYON, PH. D., Cambridge.
*Lecturer on Assyriology.*

CHARLES W. BIDDLE, D. D., Cambridge.
*Lecturer on the Pastoral Office.*

HELEN L. MELLEN, 126 Packard Avenue.
*Librarian.*

WILLARD S. SMALL, West Hall, 4.
*Assistant in the Library.*

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JOHN P. MARSHALL, A. M., 48 Professors' Row.
*Director of the Museum.*

FRANK W. DURKEE, A. M., West Hall, 5.
*Director of the Gymnasium.*

WILLIAM R. WOODBURY, A. B., M. D.,
164 Newbury Street, Boston.
*Medical Director of the Gymnasium.*

CHARLES R. GRAY, Medford.
*Superintendent of Buildings.*

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*Instructor in Electrical Engineering.*

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CATALOGUE: Mr. Start, *Chairman;* Professors Hooper and Maulsby.

RELIGIOUS SERVICES: President Capen, *Chairman;* Professors Shipman, Bray, Maulsby, and Mr. Sanborn.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Knight (from the Divinity School), *Chairman;* Mr. Durkee and Mr. Start.

GLEE CLUB: Mr. Lewis, *Chairman;* Professor Graves, and Professor Knight (from the Divinity School).

# Undergraduates.

## COURSES IN LIBERAL ARTS.

### Senior Class.

| | | |
|---|---|---|
| Benton, Herbert Elmon . . | *Annisquam* . . . | West Hall, 11. |
| Goodrich, William Henry . | *Fitchburg* . . . | Θ Δ X House. |
| Hodgdon, Fred Crosby . . | *Waltham* . . . | East Hall, 24. |
| Leighton, Virgil Louis . . | *W. Falmouth, Me.*, | West Hall, 11. |
| Small, Willard Stanton . . | *Provincetown* . . | West Hall, 4. |
| Snow, Charles Joseph . . | *Haverhill* . . . | Dean Hall, 11. |
| Stroud, Charles Crawford . | *N. Grosvenordale, Conn.*, | Δ T Δ House. |
| Wade, Charles St. Clair . . | *West Somerville* . | East Hall, 24. |
| Walker, Fred Storer . . . | *Westbrook, Me.* . | West Hall, 17. |
| Webster, Fred Henry . . . | *Haverhill* . . . | West Hall, 3. |
| Whittemore, Thomas . . . | *Cambridge* . . . | Θ Δ X House. |
| Wren, Frank George . . . | *Roslindale* . . . | Dean Hall, 6. |

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| | | |
|---|---|---|
| Eastwood, James Stewart . | *W. Brattleboro, Vt.*, | West Hall, 17. |
| Hicks, Blanchard Fossett . | *Rockland, Me.* . | West Hall, 14. |

### Junior Class.

| | | |
|---|---|---|
| Averell, Eugene . . . . | *Lynn* . . . . . | Dean Hall, 1. |
| Barney, Charles Neal . . | *Lynn* . . . . . | West Hall, 22. |
| Chessmore, Frank Harding . | *Jonesville, Vt.* . . | West Hall, 12. |
| Clark, Charles Dow . . . | *St. Albans, Vt.* . | West Hall, 7. |
| Clarke, Edward Perkins . . | *Mystic, Conn.* . . | Mid. Hall, 11. |
| Craig, Edward Channing . | *Franklin* . . . | West Hall, 21. |
| Dunham, William Roger . | *Barre, Vt.* . . . | West Hall, 12. |
| Eaton, Clarence Livingstone, | *Worcester* . . . | West Hall, 2. |
| Fobes, Harold Bartlett . . | *Portland, Me.* . . | West Hall, 6. |
| Folsom, Harry Charles . . | *Oakland, Me.* . . | West Hall, 6. |
| Frank, Henry Pennell . . | *Portland, Me.* . . | Θ Δ X House. |
| Ireland, George Preston . . | *Springfield* . . . | East Hall, 22. |
| Lynde, Frank Martin . . . | *Williamstown, Vt.* | West Hall, 19. |
| Nason, Daniel White . . . | *Bangor, Me.* . . | 102 Curtis St. |
| Ricketts, Charles Lucius . | *Monson* . . . . | West Hall, 22. |
| Saunders, Joseph Henry . | *Everett* . . . . | Dean Hall, 2. |

| | | |
|---|---|---|
| Sheldon, James Fitts . . . | *Haverhill* . . . | West Hall, 8. |
| Smith, Robert Baxter . . | *No. Tunbridge, Vt.* | West Hall, 4. |
| Thompson, Fred Everett . | *Bangor, Me.* . . | West Hall, 1. |
| Whitehorne, William Risby. | *W. Somerville* . . | East Hall, 22. |
| Winslow, Guy Monroe . . | *W. Somerville* . . | Mid. Hall, 11. |

| | | |
|---|---|---|
| King, Charles Guy . . . | *Mattapan* . . . | East Hall, 28. |
| Larrabee, Frank Philip . . | *Portland, Me.* . . | West Hall, 1. |

**Sophomore Class.**

| | | |
|---|---|---|
| Austin, Philip Anthony . . | *Barre, Vt.* . . . | West Hall, 24. |
| Bailey, Mabel Prescott . . | *Methuen* . . . . | 36 Lawrence St. |
| Barnard, Percival Gates . . | *Lowell* . . . . | West Hall, 29. |
| Belcher, Walter Hermon . | *W. Medford* . . | East Hall, 16. |
| Cheever, Ralph Holbrook . | *Portsmouth, N. H.* | Mid. Hall, 10. |
| Congdon, Joseph . . . . | *Clarendon, Vt.* . | East Hall, 25. |
| Corridan, Eugene Francis . | *Weymouth* . . . | Dean Hall, 13. |
| Dillon, David Francis . . | *Palmer* . . . . | Dean Hall, 13. |
| Fickett, Edward Wyman . | *Spencer* . . . . | East Hall, 30. |
| Hall, Clifford Foster . . . | *Nashua, N. H.* . | West Hall, 16½. |
| Hayes, Ethel Munroe . . . | *Somerville* . . . | 252 Medford St. |
| Hill, Blanche Harwood . . | *Medford* . . . . | Main St. |
| Holbrook, Henry William . | *Palmer* . . . . | West Hall, 24. |
| Johnson, Sidney Breed . . | *Lynn* . . . . . | $\Delta\ T\ \Delta$ House. |
| Jordan, Charles Gilbert . . | *E. Braintree* . . | West Hall, 28. |
| Lewis, Orlando Faukland . | *S. Boston* . . . | 20 Professors Row. |
| Lincoln, Joseph Gardner . | *Ware* . . . . . | East Hall, 19. |
| Lowell, Charles Sumner . . | *Rockland* . . . | East Hall, 25. |
| Maguire, George Francis . | *Rockland* . . . | $A\ T\ \Omega$ House. |
| Marvin, Reignold Kent . . | *Roxbury* . . . . | West Hall, 25. |
| McLaine, William Ernest . | *Haverhill* . . . | East Hall, 30. |
| Meacom, Gertrude Holbrooke, | *Chelsea* . . . . | 278 Chestnut St., Chelsea. |
| O'Neil, William Roe . . . | *Attleboro* . . . | East Hall, 18. |
| Page, Cecil Alonzo . . . | *Lowell* . . . . | East Hall, 29. |
| Sampson, Edwin Russell . | *N. Weymouth* . . | West Hall, 2. |
| Small, William Morton . . | *Baldwinville* . . | 54 Curtis St. |
| Smith, Orren Henry . . . | *Williamstown, Vt.*, | West Hall, 12. |
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| Stover, Josiah Albert . . . | *Kittery, Me.* . . | Dean Hall, 4. |
| Whitaker, Henry Charles . | *Richmond, Vt.* . | $\Theta\ \Delta\ X$ House. |

| | | |
|---|---|---|
| Goddard, Mary Frances . . | *W. Somerville* . . | 46 Newbury St. |
| Polk, Cora Alma . . . . | *Towanda, Pa.* . | 34 Newbury St. |

### Freshman Class.

| | | |
|---|---|---|
| Bennett, Rose . . . . . | *Canton Point, Me.* | 117 Winthrop St. |
| Blanchard, Lem Gale . . . | *So. Barre, Vt.* . | West Hall, 15. |
| Brown, Helen Elizabeth . . | *Waltham* . . . | 46 Russell St. |
| Burleigh, Winthrop Ridgely, | *Deering, Me.* . . | 65 Curtis St. |
| Butterfield, John McArthur, | *Revere* . . . . | East Hall, 20. |
| Day, John Boynton Wilson, | *Charlestown* . . | West Hall, 32. |
| Dyer, Florence Gertrude . | *Medford* . . . . | 84 Salem St. |
| Fickett, Mary Grace . . . | *Spencer* . . . . | 28 Professors Row. |
| Gale, Frank Randall . . . | *Barre, Vt.* . . . | West Hall, 15. |
| Gardner, Lucie Marion . . | *Salem* . . . . | 4 Lynde St. |
| Hewitt, Ernest John . . . | *So. Royalton, Vt.*, | West Hall, 15. |
| Hodgdon, Georgia Louise . | *Waltham* . . . | 17 Central St. |
| Hodge, Edith Louise . . . | *Franklin* . . . | 5 Mt. Pleasant Ave. |
| Hodgman, Arthur Amos . | *E. Somerville* . . | 8 New Cross St. |
| Knowlton, John Wellington | *New Bedford* . . | Θ Δ X House. |
| Lane, Grace Harvey . . . | *Medford* . . . . | 66 Brooks St. |
| Litchfield, Nathaniel Hale . | *Boston* . . . . . | Dean Hall, 12. |
| McDonough, Margaret . . | *Woburn* . . . . | 51 Winn St. |
| Morris, George William . . | *E. Somerville* . . | 40 Glen St. |
| Parks, Warren Stone . . . | *Hudson* . . . . | Dean Hall, 14. |
| Perry, Carlton Albert . . | *Fort Plain, N. Y.*, | East Hall, 7. |
| Peterson, Carrie Downing . | *Weymouth* . . . | 117 Winthrop St. |
| Prior, Charles Frank . . . | *Ludlow, Vt.* . . | 211 Holland St. |
| Russell, Winnie Warren . . | *Woburn* . . . . | 85 Montvale Ave. |
| Sanderson, George Charles. | *Chelsea* . . . . | East Hall, 20. |
| Sanford, Rollin Brewster . | *Albany, N. Y.*. . | East Hall, 7. |
| Shipman, Albert Eaton . . | *College Hill* . . | 80 Professors Row. |
| Sibley, Carrie Hunter. . . | *Spencer* . . . . | 28 Professors Row. |
| Smith, Payson . . . . . | *Portland, Me.* . . | Dean Hall, 8. |
| Start, Alaric Bertrand . . | *College Hill* . . | Mr. Start's. |
| Sturtevant, Olive Kilburn . | *Stoneham* . . . | 33 Gould St. |
| Wheeler, Alfred Winslow . | *Oakland, Me.* . . | Dean Hall, 8. |
| White, Winthrop Warner . | *Medford* . . . . | East Hall, 8. |
| Williams, Franklin Bates . | *Roxbury* . . . . | Dean Hall, 7. |

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| | | |
|---|---|---|
| Davis, Horace Amos . . . . | *Dorchester* . . . | Dean Hall, 7. |
| Robinson, Albert DeMerritt, | *Windham, Me.* . | Dean Hall, 9. |

## ENGINEERING COURSES.

### Senior Class.

| | | |
|---|---|---|
| Byrne, Edward Patrick | *Medford* | 15 Stearns Ave. |
| Hathaway, Carl Voltaire | *South Cabot, Vt.* | West Hall, 14. |
| Hersey, Isaac Burrill | *Hingham* | West Hall, 19. |
| McDavitt, John Olin | *Lawrence* | West Hall, 9. |
| Mallett, John Purington | *Topsham, Me.* | East Hall, 9. |
| Morrison, Adelbert Harland | *Lawrence* | West Hall, 9. |
| Morse, Robert Henry | *West Somerville* | West Hall, 14. |
| Pember, Frederick Howard | *Peabody* | East Hall, 9. |
| Read, Rufus Curtis | *Attleboro* | West Hall, 23. |
| Spalding, Samuel Albert | *Danvers* | West Hall, 23. |
| Whitney, Orville Jophanus | *Medford* | West Hall, 9. |
| Wills, Albert Potter | *Waltham* | West Hall, 26. |
| Wright, Edwin Hanscom | *Charlestown* | West Hall, 26. |

### Junior Class.

| | | |
|---|---|---|
| Foss, Hubert Collamore | *Bangor, Me.* | Dean Hall, 6. |
| George, Arthur Lincoln | *Lebanon, N. H.* | Dean Hall, 5. |
| Page, Charles Harrison | *Lowell* | East Hall, 19. |

### Sophomore Class.

| | | |
|---|---|---|
| Bolles, Robert Henry | *Marion* | East Hall, 31. |
| Brothers, George Arthur | *Lowell* | West Hall, 26. |
| Hicks, Frank Files | *W. Somerville* | East Hall, 34. |
| Ives, John Nash | *Roxbury* | East Hall, 26. |
| Merrill, Meldon Humphrey | *Yarmouth, Me.* | East Hall, 14. |
| Ohata, Konosuke | *Ibaraki-Ken, Japan,* | East Hall, 27. |
| O'Regan, Charles Sumner | *Bondsville* | West Hall, 16. |
| Perry, Leslie Lawrence | *Rutland, Vt.* | East Hall, 31. |
| Pierce, Guy Clifford | *Lowell* | West Hall, 25. |
| Pindar, Ralph Waldo | *Lowell* | East Hall, 29. |
| Sabine, Edward Dana | *Malden* | East Hall, 16. |
| Smith, Warner Daniel | *Marshfield, Vt.* | Mid. Hall, 12. |
| Symonds, Herbert Washburn, | *Hancock, N. H.* | East Hall, 10. |
| Taylor, William Gavin | *Medford* | East Hall, 34. |
| Thurston, Arthur | *Haverhill* | West Hall, 29. |
| Whiton, Charles Edward | *Greenwood* | Mid. Hall, 16. |

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|---|---|---|
| Cadieu, Edward Leland | *Chelsea* | East Hall, 14. |
| Chick, Walter Everett | *Medford* | East Hall, 34. |
| Clayton, Osro Randall | *Weston, Vt.* | East Hall, 10. |
| Noyes, Charles Ellsworth | *Lisbon, N. H.* | East Hall, 28. |

### Freshman Class.

| | | |
|---|---|---|
| Barden, Henrie Clark . . . | *No. Attleboro* . . | 425 Highland Ave. |
| Boardman, Harold Everett . | *Medford* . . . . | Mid. Hall, 5. |
| Brown, Thomas Dalton . . | *Boston* . . . . | 30 No. Russell St. |
| Browning, Charles Augustus, | *Somerville* . . . | Mid. Hall, 7. |
| Byam, Frank Albert . . . | *Waltham* . . . | West Hall, 13. |
| Chase, Josiah Brown, Jr. . | *W. Newton* . . . | Dean Hall, 3. |
| Clark, Charles Brooks . . | *Medford* . . . . | East Hall, 17. |
| Clark, Warren Stewart . . | *St. Albans, Vt.* . | West Hall, 7. |
| Clark, William Warren . . | *Medford* . . . . | East Hall, 17. |
| Crowley, Daniel Francis . . | *Medford* . . . . | 10 West St. |
| Eames, George Clifton . . | *Embden, Me.* . . . | 65 Curtis St. |
| Edmands, John Stetson . . | *Somerville* . . . | 49 Thurston St. |
| Eldridge, Harold Norton . | *Dexter, Me.* . . | West Hall, 13. |
| Fenton, Robert Hall . . . | *Willimantic, Conn.*, | East Hall, 33. |
| Garcelon, Herbert Irving . | *W. Somerville* . . | Mid. Hall, 5. |
| Graves, Wallace Humphrey, | *Bangor, Me.* . . | 18 Park St. |
| Green, Charles Boden . . . | *Lynn* . . . . . | East Hall, 26. |
| Hall, Walter Davis . . . . | *Medford* . . . . | East Hall, 8. |
| Hammond, Charles Lincoln . | *Atlantic* . . . . | East Hall, 13. |
| Healey, Rolla Edwin . . . | *Claremont, N. H.*, | Dean Hall, 9. |
| Hill, George William . . . | *Stoneham* . . . | East Hall, 23. |
| Hill, Herbert Jasper . . . | *Boston* . . . . | West Hall, 21. |
| Holt, Ralph Warren . . . | *Stow* . . . . . | $\Theta\,\Delta\,X$ House. |
| Houghton, John Howard . | *E. Boston* . . . | Mid. Hall, 7. |
| Huston, Milton . . . . . | *W. Falmouth, Me.*, | East Hall, 32. |
| Jacobs, Benjamin Foster, Jr., | *Medford* . . . . | West Hall, 27. |
| Lane, Harry Alfred . . . | *Foxboro* . . . . | Dean Hall, 14. |
| Mitchell, Stephen Clarence . | *Hull* . . . . . | Dean Hall, 10. |
| Montgomery, Charles Eland, | *Lowell* . . . . | West Hall, 31. |
| Morgan, Albion Bateman . | *Falmouth, Me.* . | East Hall, 32. |
| Nash, Henry Ray . . . . | *Bradford* . . . | East Hall, 33. |
| Noyes, Harry Goodenow . | *Gorham, N. H.* . | Dean Hall, 9. |
| Olmstead, Elmer Sheridan . | *Somerville* . . . | Mid. Hall, 7. |
| Parker, Richard Bentley . | *Medford* . . . . | West Hall, 27. |
| Parker, Harry Orville . . | *Atlantic* . . . . | East Hall, 13. |
| Parker, Charles William . . | *Reading* . . . . | West Hall, 13. |
| Plorme, Max Alaric . . . | *Rocky Hill, Conn.*, | West Hall, 16. |
| Preble, Ernest Orello . . . | *Webster* . . . . | West Hall, 30. |
| Randlett, Fred Morse . . . | *Lawrence* . . . | East Hall, 15. |
| Ray, Frederick Nash . . . | *Bradford* . . . | East Hall, 15. |
| Richardson, George Edward, | *Lowell* . . . . | West Hall, 31. |
| Rowbotham, George Walter, | *Boston* . . . . | West Hall, 10. |
| Russell, Howard Irving . . | *W. Somerville* . . | Mid. Hall, 5. |

| | | |
|---|---|---|
| Ryder, Delano Richmond | *Marion* | East Hall, 18. |
| Smith, Kilby Page | *Waltham* | Dean Hall, 3. |
| Stebbins, Charles Bowles | *W. Somerville* | West Hall, 32. |
| Thayer, Arthur Ellis | *W. Somerville* | Mid. Hall, 5. |
| Walker, Charles Perley | *Lawrence* | Dean Hall, 10. |
| Weeks, Stephen Merrill | *Orford, N. H.* | East Hall, 33. |
| Welch, Walter Frederick | *Stoneham* | East Hall, 23. |
| Wheeler, Walter Stedman | *Hudson* | Dean Hall, 14. |
| Wyman, Walter Scott | *Oakland, Me.* | Dean Hall, 8. |
| Simpson, John Fred | *S. Newmarket, N.H.* | East Hall, 9. |

## SPECIAL STUDENTS.

| | | |
|---|---|---|
| Atwood, Louise Russell | *Medford* | 4 Garden St. |
| Clement, Sumner | *Newton Centre* | West Hall, 10. |
| Dolbear, Katy Ella | *College Hill* | 134 Professors Row |
| Dresser, Walter Prescott | *Fitchburg* | West Hall, 3. |
| French, Allen Evander | *Waltham* | Dean Hall, 2. |
| Hayward, Daniel Baxter | *E. Braintree* | West Hall, 28. |
| Lambert, Fred Dayton | *Muscatine, Ia.* | Δ T Δ House. |
| Leighton, Margaret Wentworth | *Malden* | 573 Pleasant St. |
| McKenzie, Archibald | *Woodstock, Vt.* | West Hall, 8. |
| Putnam, Frank Wendell | *Charlestown* | West Hall, 32. |
| Smith, Frank Campbell | *Waltham* | West Hall, 13. |
| Washburn, Arthur Harold | *Brockton* | 16 Bolton Place. |
| Wassum, Elizabeth French | *Palmer* | 28 Professors Row. |
| Whitney, John Augustus | *Claremont, N. H.* | West Hall, 27. |

## SUMMARY.

| | | |
|---|---|---|
| GRADUATES | | 10 |
| COURSES IN LIBERAL ARTS. | | |
| Seniors | 14 | |
| Juniors | 23 | |
| Sophomores | 32 | |
| Freshmen | 36 | |
| | — | 105 |
| ENGINEERING COURSES. | | |
| Seniors | 13 | |
| Juniors | 3 | |
| Sophomores | 20 | |
| Freshmen | 53 | |
| | — | 89 |
| SPECIAL STUDENTS | 14 | |
| | — | 14 |
| TOTAL IN COLLEGE OF LETTERS | | 218 |
| TOTAL IN DIVINITY SCHOOL | | 40 |
| TOTAL IN MEDICAL SCHOOL | | 80 |

# Requirements for Admission.

## SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for different courses will be found in the schedule of examination groups on pages 29 and 30.

*Latin.*

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. CÆSAR. — Gallic War, Books I–IV.

3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. VIRGIL. — Æneid, Books I–VI.

5. OVID. — Metamorphoses, 2,500 lines.

6. LATIN COMPOSITION. — Harkness's Latin Composition to Part III, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

*Greek.*

7. GREEK GRAMMAR. — Hadley's, Crosby's, Curtius's, or Goodwin's Greek Grammar, including Prosody.

8. XENOPHON. — Anabasis, four books.

9. HOMER. — Iliad, three books.

10. GREEK COMPOSITION. — The translation of simple English prose into Greek.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

*German.*

11. ELEMENTARY GERMAN.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak, and of the more usual strong verbs; the more common prepo-

*German.* sitions; the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.]

(*b*) Ability to translate a passage of simple prose at sight, a vocabulary of the less-used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose, with a few lyric poems.]

(*c*) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.]

12. INTERMEDIATE GERMAN.

(*a*) The candidate must give evidence of a thorough knowledge of the elementary grammar (see above, 11*a*), and of the use of modes and tenses.

(*b*) He must have translated the equivalent of four hundred pages of German, including Wilhelm Tell (Schiller), and twenty pages of lyric ballads.

(*c*) He must be able to pronounce German, and to render simple English sentences into that language.

13. ADVANCED GERMAN.

(*a*) Proficiency in more advanced grammar. In addition to a thorough knowledge of accidence (including the elements of word-formation), and of the principal values of prepositions and conjunctions, the candidate must be familiar with the essentials of German syntax, particularly that of the modal auxiliaries and the subjunctive and infinitive modes.

(*b*) Ability to translate ordinary German, to be acquired by the reading, in addition to the elementary requirement, of the following works: Der Fluch der Schönheit (Riehl); Aus dem Staat Friedrichs des Grossen (Freytag); Die Harzreise (Heine); the first three books of Dichtung und Wahrheit (Goethe); Minna von Barnhelm (Lessing); Wilhelm Tell and Das Lied von der Glocke (Schiller); and thirty pages of lyrics or ballads.

(*c*) Ability to write in German a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[While, at the examination, matters of very subordinate interest or of minor detail will not be set as subjects for composition, it is hoped that teachers may be led by this requirement to stimulate from the beginning the pupil's interest in the subject-matter of the works read in preparation.]

14. ELEMENTARY FRENCH. *French.*

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives"; the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under Elementary German (*a*).]

(*b*) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(*c*) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German (*c*).]

15. INTERMEDIATE FRENCH.

(*a*) and (*c*) as above.

(*b*) He must have translated the equivalent of five hundred pages of French, including the plays Mademoiselle de la Seiglière (Sandeau) and Athalie (Racine).

16. ADVANCED FRENCH.

(*a*) Proficiency in more advanced grammar. In addition to a knowledge of the accidence and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, especially the use of modes and tenses, and with the more frequently recurring idiomatic phrases.

(*b*) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including Le siège de Berlin and La dernière classe (Daudet); Colomba (Mérimée); Mademoiselle de la Seiglière, the play (Sandeau); Jeanne Darc (Henri Martin); and one play each of Corneille, Racine, and Molière.

(*c*) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German (*c*).]

17. ARITHMETIC, including the Metric System. *Mathematics.*

18. ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical

*Mathematics.* progression, and the binomial theorem for positive integral exponents.

19. PLANE GEOMETRY.

20. SOLID GEOMETRY.

*History.* 21. ANCIENT HISTORY (Greece and Rome), with either

(*a*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or

(*b*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The amount of preparation required is indicated by the following list of works: For Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Higginson's Young Folks' History of the United States, or Johnston's History of the United States for Schools.

*English.* 22. ENGLISH GRAMMAR AND COMPOSITION. — Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1894. — Shakespeare's Julius Cæsar and Merchant of Venice; Scott's Lady of the Lake; Arnold's Sohrab and Rustum; The Sir Roger de Coverley Papers in the Spectator; Macaulay's second Essay on the Earl of Chatham; Emerson's American Scholar; Irving's Sketch Book; Scott's Abbot; Dickens's David Copperfield.

For 1895. — Shakespeare's Merchant of Venice and Twelfth Night; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; the Sir Roger de Coverley Papers in the Spectator; Macaulay's Essays on Milton and Addison; Webster's First Bunker Hill Oration; Irving's Sketch Book; Scott's Abbot.

For 1896. — Shakespeare's Merchant of Venice and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Defoe's History of the Plague in London; Scott's Woodstock; Webster's First Bunker Hill Oration; Irving's Tales of a Traveller; George Eliot's Silas Marner.

*Sciences.* 23. PHYSICS. The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department.

*Sciences.*

24. CHEMISTRY. Remsen's Briefer Course or its equivalent.

25. NATURAL HISTORY. Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

## EXAMINATION GROUPS.

*For courses leading to degree of A. B.*

Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups: —

### Group I.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

### Group II.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16.
FRENCH, 14. } or { GERMAN, 11.

This group differs from Group I in substituting for Greek advanced work in Modern Languages.

*For courses leading to degree of Ph. B.*

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

### Group III.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 12. } or { FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11.

**Group IV.**

MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16. } or { GERMAN, 11 and 12. FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11. } or { GERMAN, 11 and 12. FRENCH, 14 and 15.

PHYSICS, 23.
CHEMISTRY, 24.
NATURAL HISTORY, 25.

[LATIN, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, GERMAN, 11 and 12, or FRENCH, 14 and 15.]

*For Candidates for Engineering Courses.*

Candidates for the courses leading to the degrees of Bachelor of Electrical or Civil Engineering will be required to take the subjects comprised in

**Group V.**

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or FRENCH, 14.
ENGLISH, 22.

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group III in modern languages, and of elementary work in three scientific subjects.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will also be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be candidates for admission to the Freshman class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Secretary of the Faculty) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course. Certificates must be in the hands of the Secretary at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts or for that of Bachelor of Philosophy, according to the examination group upon which they are admitted to the college. In either case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation. They may obtain the degree of Bachelor of Arts on the satisfactory completion of twenty-four term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the course students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accomplished by the student in regular standing counts toward the attainment of the degree. The period within which that may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS.

[NOTE. — The unit for indicating the requirements is the *term hour*, representing the number of hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week for one term represents a requirement of three term hours; if it calls for three hours a week for one year, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows: —

| | Term Hours. |
|---|---|
| Languages (Latin, Greek, French, German; each student to take *three*) | 18 |
| English (Rhetoric, Composition, Themes, Oratory) | 12 |
| Mathematics | 6 |
| Science (Physics, Chemistry, Biology; each student to take *one*) | 6 |
| Mental and Moral Sciences (Psychology, Logic, Ethics, History, Economics; each student to take *one full or two half* subjects) | 6 |
| Physical Training | 2 |
| A total of | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, but the prescribed work in the group of Mental and Moral Sciences cannot be taken before the second year except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major subject, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the prescribed groups as a part of the eighteen hours which he is required to give to his major subject. The major subject and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of his instructor in his major subject, the student shall make up a program of eighteen term

hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by such special restrictions as may be applied to the taking of certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have attained Grade B as an average for his entire work.

**Summary.**

| | | | |
|---|---|---|---|
| Prescribed work | 50 | term | hours. |
| Major subject | 18 | " | " |
| Collateral subjects | 18 | " | " |
| Free electives | 42 | " | " |
| | 128 | " | " |

# Departments of Instruction.

## MAJOR SUBJECTS.

Major subjects may be chosen in the following departments: —

| | |
|---|---|
| LATIN. | POLITICAL SCIENCE. |
| GREEK. | MATHEMATICS. |
| FRENCH. | PHYSICS. |
| GERMAN. | CHEMISTRY. |
| ENGLISH LITERATURE. | BIOLOGY. |
| HISTORY. | ENGINEERING. |

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given in 1894–95. In most cases alternates are indicated, which fill their places in the program for that year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts for 1894–95 will be found on page 61. No two subjects assigned to the same hour can be taken simultaneously by any student. The revision of the program for 1895–96 will be announced before the close of the current college year, so that plans for future work may be made with reference thereto.

## ENGLISH.

PROFESSOR SHIPMAN.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are assigned, with some variety of method, at the time of writing, usually not the same topic for all, but a list is furnished from which each writer may select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification, this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. A text-book is used as the basis of instruction, and is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. The close relation of Rhetoric to both Psychology and Logic is kept in sight. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of the applications of the subject, or exclusively in composition.

SUBJECTS.

1. — Composition, Lectures, Discussion of Papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

2. — Rhetoric, with practical exercises. Second year. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

3. — Composition and Themes. Second year. *Monday and Wednesday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

4. — Themes and Forensics. Third year. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year.*) PROFESSOR SHIPMAN.

5. — Daily Composition. Elective, or optional with 3. *Tuesday, Thursday, and Saturday at* 8.45 (*second half-year*). PROFESSOR SHIPMAN.

Subjects 1, 2, 3, or 5, and 4 will constitute, with Oratory 1, the prescribed work in English.

6. — Rhetoric (advanced course). Elective for students who have completed English 2, with 3 or 5. *Monday, Wednesday, and Friday at* 11.45 *(first half-year)*. PROFESSOR SHIPMAN.

7. — Composition (advanced course). Elective for students who have completed the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 *(second half-year)*. PROFESSOR SHIPMAN.

8. — History of the English Language. *Monday, Wednesday, and Friday at* 10.45 *(first half-year)*. PROFESSOR MAULSBY.

Some knowledge of ancient and modern languages is essential to a profitable study of the history of English. The successive stages in the development of the vocabulary and the grammar of our speech are noted, and this general view is supplemented with inquiry into the derivation and history of specific words.

## ORATORY.

PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out, and, so far as possible, remedies suggested. The required course aims at reading that shall be intelligent, natural, and forcible. Attempt is made to develop, both in voice and gesture, spontaneous expression from the mental side. In the elective course opportunity is given for individual presentation of selections from standard literature, and for practice in debate on subjects of current interest. Throughout the work the student meets the instructor personally, for rehearsal and criticism.

### SUBJECTS.

1. — Class exercises in vocalization and gesture; reading of standard selections; individual declamation. *Section a, Tuesday; Section b, Thursday at* 11.45. PROFESSOR MAULSBY.

2. — Individual declamation, original or selected; practice in debate. *Tuesday at* 2. PROFESSOR MAULSBY.

## LATIN.

PROFESSOR DEARBORN.

The work in this department is arranged with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, by reading Latin authors and by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early subjects the forms and construction of the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The later subjects are especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays and read and criticised before the class.

SUBJECTS.

1. — Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those electing Latin as a prescribed language.

2. — Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday, Wednesday, and Friday at* 11.45.

PROFESSOR DEARBORN.

3.—Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR DEARBORN.

4.—Cicero; Terence; Catullus; Quintilian. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR DEARBORN.

5.—Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when taken should be taken simultaneously with it in the Freshman year.

[6.—Roman satirists, with special reference to the works of Horace and Juvenal. *Tuesday and Thursday from* 4 to 5.30. PROFESSOR GRAVES.]

7 —Terence (Andria, Adelphoe, Heauton Timorumenos, and Phormio); Plautus (Captivi, Menaechmi, Trinummus). *Tuesday and Thursday from* 4 *to* 5.30. PROFESSOR GRAVES.

Latin 6 and 7 are offered in alternate years, 7 being open in 1894–95. Although any one is eligible who has completed Latin 3, they are intended primarily for students in the graduate department. Lectures are given in 6 on the history of Roman satire and on the satirists, and in 7 on the development of the theatre, the *sermo plebeius*, and the styles of Plautus and Terence.

## GREEK.

PROFESSORS SCHNEIDER AND GRAVES.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

SUBJECTS.

1. — Elementary; Goodwin's Grammar; White's Beginner's Book; Xenophon (Anabasis and Hellenica); Homer (Iliad I–III); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 3, *and Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR GRAVES.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

2. — Xenophon (Memorabilia or Cyropœdia); Herodotus (Books VI and VII); Homer (Phæacian Episode of the Odyssey); Sophocles (Philoctetes); Greek Composition. *Monday, Wednesday, and Friday at* 2. PROFESSOR GRAVES.

Greek 2 is the course for students entering with Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Grecian antiquities, and on the literary characteristics of the authors read.

3. — Lysias (Selections); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.

[4. — Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.]

Greek 3 and 4 are offered in alternate years and are open to those who have taken Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and modes and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

5. — Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

6. — Plato (Symposium); Aristotle (Ethics, Books I–IV, or Politics); reading at sight in Herodotus and Lucian. *Monday, Wednesday, and Friday at* 2. PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

7. — Topics in Greek History; reading at sight in Homer and Euripides; Greek Composition. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR GRAVES.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

8. — Demosthenes (Private, Hellenic, Olynthiac, and Philippic Orations); Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.

[9. — Study of the Sources of Greek History; critical reading of Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.]

[10. — Plato (Gorgias, Phaedo, Republic I–V); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 8 being the subject for 1894–95. These subjects are intended for those wishing to pursue graduate work in Classical Philology. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek History, and in 10 on the life, works, style, and philosophy of Plato.

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elemen-

tary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced courses the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. In all subjects, composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Five consecutive subjects are offered. While it is not impossible to take these five subjects within the four college years, the scheme is based upon the supposition that the earlier subjects will have been taken by some at least in their preparatory work.

SUBJECTS.

1. — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II.; Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Tuesday, Thursday, and Saturday,* (*a*) *at* 8.45, (*b*) *at* 9.45. PROFESSOR FAY.

2. — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, § § 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; Grammar and Composition; one essay in German. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR FAY.

3. — Schiller, Maria Stuart (with Dünzer's Erläuterungen), Geschichte des Abfalls der Niederlande (selections); Goethe, Egmont; Müller's Geschichte, § § 374–419 (The Thirty Years' War); Schiller, Wallenstein; Balladen und Romanzen (Buchheim's collection); two essays in German. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR FAY.

4. — Lessing, Prosa, Nathan der Weise; Goethe, Tasso, Faust; Dünzer, Erläuterungen zu Nathan, zu Tasso, zu Faust; two essays in German. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR FAY.

5. — Vilmar, Geschichte der deutschen Literatur, with illustrative texts for principal epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. Thesis for honor men. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR FAY.

## FRENCH.

PROFESSOR FAY AND MR. LEWIS.

Five consecutive subjects are offered. The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred.

### SUBJECTS.

1. — Edgren's Grammar; Super's French Reader; Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Tuesday, Thursday, and Saturday,* (*a*) *at* 8.45, (*b*) *at* 9.45. MR. LEWIS.

2. — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie; Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Monday, Wednesday, and Friday at* 8.45. MR. LEWIS.

3. — Literature of the 17th century: Racine, Andromaque, Mithridate, Phèdre; Molière, Le Bourgeois Gentilhomme, Le Misanthrope, Le Tartufe; La Société Française au XVII^e^ Siècle (Crane); Molière, Les Précieuses Ridicules, Les Femmes Savantes; Madame de Sévigné, Lettres Choisies; one essay in French. (Ploetz's Nouvelle Grammaire Française will be used for reference in Course 3, and the German exercises of his Cours Gradué de Thèmes will be translated into French.) *Monday, Wednesday, and Friday at* 8.45. PROFESSOR FAY.

4. — Literature of the 19th century: Le Romantisme Français (Crane); Hugo, Hernani, Ruy Blas, L'Année Terrible; Lamartine, Jocelyn; George Sand, Indiana; De Musset, Confessions d'un Enfant du Siècle; De Vigny, Cinq-Mars; Taine, La Fontaine et ses Fables; Cherbuliez, Méta Holdenis; two essays in French. *Monday, Wednesday, and Friday at* 3. MR. LEWIS.

[5. — Demogeot, Littérature de la Langue Française, with illustrative texts for 16th and 18th centuries; two essays in French. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. Thesis for honor men. PROFESSOR FAY.]

## ITALIAN.

PROFESSOR FAY.

The course offered in Italian is open to those only who have had two years of college work in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

SUBJECT.

1. — Grandgent's Grammar and Composition; De Amicis, Spagna; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday, Thursday, and Saturday at* 10.45.

PROFESSOR FAY.

## HEBREW.

DR. CURTIS.

Two subjects, each occupying two hours a week for a year, are offered in Hebrew, enabling the student to obtain a knowledge of the rudiments of the language, and if desired to pursue it further and obtain some knowledge of the literature. It will be noticed that these subjects are given in alternate years.

SUBJECTS.

[1. — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism. *Tuesday and Thursday at* 3. DR. CURTIS.]

2. — Advanced Hebrew; Readings from Ancient, Middle, and Late Hebrew; Discussion of the Critical Questions involved. *Tuesday and Thursday at* 3. DR. CURTIS.

## ENGLISH LITERATURE.

PROFESSOR MAULSBY.

The study of our literature offers opportunity for acquaintance with the work of selected English writers, from the time of Chaucer to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philo-

logical details, the effect of environment, and the mass of published criticism that clusters about the great writers, are not neglected, although given a subordinate place. The ultimate object of the course is mainly the unmeasured yet positive culture that inheres in open-minded intercourse with the masters in literature. The method pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. Students are advised to adhere as closely as possible to the order of subjects as indicated by the numbering. The library contains multiple copies of many of the authors read.

SUBJECTS.

[1. — Chaucer. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR MAULSBY.]

Morris's edition of the Prologue is carefully read, followed by selected tales and minor poems. Attention is paid to the etymology of Chaucerian forms, and to comparison of the English of the fourteenth with that of the nineteenth century. As preparation for this course, acquaintance with ancient and modern languages is desirable. An outline of the development of English literature from the beginning until Chaucer's day is given in lectures.

2. — Shakespeare. *Monday, Wednesday, and Friday at* 3 (*second half-year*). PROFESSOR MAULSBY.

The aim in the study of Shakespeare is first to understand him, then to appreciate his poetic and dramatic workmanship. An outline of the course of our literature from Chaucer to Milton is presented in lectures.

3. — The Classic Period. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR MAULSBY.

Selected authors from Milton to Johnson are considered, with attempt to note and account for the essential resemblance in their styles. The lyric poets of the period are assigned for individual study. Subjects 1 and 3 are given in alternate years.

4. — The Revolutionary Period. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.

Selection is made from the following list for treatment in the class-room: Burns, Cowper, Byron, Shelley, Keats, Coleridge, Wordsworth, Landor, Lamb, De Quincey. Each member of the class makes a personal study of some other writer of the period.

5. — Victorian Authors. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

The chief emphasis is placed upon Carlyle, Ruskin, Tennyson, and Browning, a part of the work of each being minutely studied, and a greater quantity rapidly read.

[6. — American Literature. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.]

It is attempted in a single term to outline the history of literature in the United States, from its beginning until now, the less eminent figures being rapidly treated in lectures, in order that the more important names may receive due consideration. Subjects 5 and 6 are given in alternate years.

7. — Study of a Special Topic. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). PROFESSOR MAULSBY.

In successive years the following topics are studied: (*a*) the history of the drama, (*b*) the principles of literary criticism, (*c*) the development of the novel, the last of these being assigned for the current year. Unless applicants have studied English literature for at least nine term hours, the permission of the instructor must be obtained in order to take this course.

## PHILOSOPHY.

In this department are included Logic, Psychology, Ethics, and Philosophy, strictly so called. The department is not at present organized to offer a major course, but its work is coordinated and practically continuous. Consideration is given to Psychology from the standpoint of recent physico-psychological investigation as well as from the philosophical side. In Logic two half-subjects offer opportunity for a study both of deduction and of induction. The work in Philosophy is directed toward a development of the true philosophic spirit and method, and to a survey of the History of Philosophy.

The work in Ethics embraces the study of ethical theory and practice. In addition to recitations from the text-book, students conduct their own investigations, under the direction of the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of modern ethical doctrines.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an out-

line history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times.

Lectures and criticisms in the class-room supplement the students' personal investigation.

SUBJECTS.

1. — Physical Psychology. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

2. — Psychology. Manifestations of Mind through Consciousness. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

The first subject deals with the methods and results of recen. psychological investigation, with psychology as a branch of physics; the second presents the subject in its historical relations, studies the manifestations of mind through consciousness, in the manifold products of individual and collective activity, and prepares the way for Philosophy.

3. — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

4. — Logic (advanced course), especially Inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 4 is open only to such students as have satisfactorily completed 3. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

5. — Ethics; Calderwood's Moral Science, with references to Kant's Metaphysic of Ethics and Ueberweg's History of Philosophy. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PRESIDENT CAPEN.

6. — Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR TOUSEY.

Philosophy 6 follows 5 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 5.

7. — Philosophy: its Aim, Method, and History. *Monday, Wednesday, and Friday at* 2. PROFESSOR SHIPMAN.

The discussion includes the problems of philosophy and the spirit in which it should be pursued, and this is followed by specific study of one or more systems and by an outline of the general history of philosophy.

8. — The Philosophy of Religion. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR KNIGHT.

## HISTORY.

MR. START.

The work of this department is so arranged that the student may obtain a general knowledge of the significance, sources, and methods of history, and of the large facts in the development of civilization; passing from this to a more thorough study of limited periods. The essential unity of history is kept constantly in view, as well as the bearing of the experience of the past upon the conditions and problems of to-day, especially in our own country. Much of the instruction is by lectures, but independent work on the part of the student is sought through the study of special topics, references for parallel readings, the requirement of theses, and by general class discussions. The object sought is not so much the accumulation of a great mass of facts, as an adequate comprehension of the meaning of significant historical events, and of the method to be employed in collating and using them.

Collateral subjects for major students in History will be generally in Languages, Political Science, Literature, or Philosophy, according to the needs and purposes of the individual student. Knowledge of the natural sciences, especially of Biology, is a valuable adjunct and may in some cases be required.

### SUBJECTS.

1. — Outlines of General History, from the earliest historic period to the present time. Egypt, the old East, Greece, Rome, Mediæval and Modern Europe. Nature, methods, and material of historical science. Lectures, topical work, theses, and discussions. *Tuesday, Thursday, and Saturday at* 10.45. MR. START.

History 1 is introductory to all succeeding subjects in History, and must be taken by students wishing to go on with the latter. It

is intended to give a general knowledge of the nature and progress of civilization, and the means by which it is studied. Complete in itself, it is the foundation for special study of limited periods.

2.—European History since 1648. The political revolution and formation of modern states. Lectures, parallel readings, theses, and topical work. Open to students who have completed History 1. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*).

MR. START.

4.—American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, parallel readings, theses, and topical work. Open to students who have taken History 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. START.

5.—Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 8.45. MR. START.

History 4 and 5 form a connected course in the history of our own country from the opening of the New World to the present time.

6.—European Civilization of the Middle Ages. Church and State, society and thought, in Western Europe to the Reformation. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).

PROFESSOR KNIGHT.

7.—History of the Reformation to the Peace of Westphalia in 1648. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).

PROFESSOR KNIGHT.

History 6 and 7 offer a connected study extending through the years of the first sixteen Christian centuries in European civilization. With History 2 they form a study of general European history since the Christian era.

8.—The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).

PROFESSOR KNIGHT.

9.—Seminary in American History. Research work with the sources. Open to major students in History who have completed twelve term hours of work in the department. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.*

MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and ob-

taining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library.

10. — The History of To-day. Practical work in examining, classifying, and preparing for reading and study the history of the current year. Consideration of principles of criticism, and laws of evidence. *Open only to resident graduates who have taken History 9.*

MR. START.

This subject, for graduate students, is intended to bring to bear the critical faculty and scientific historical principles upon the progress and the questions of to-day, and incidentally to prepare material which may be of value in the study of our history at a later time. Hence it is only offered to graduates who have done special work in History. It may be taken by graduate students from other colleges who have done undergraduate work equivalent to that required of graduates of Tufts College. It is believed that it will be a useful introduction to journalism, law, the Christian ministry, or to a life of public activity, as well as valuable for the historical specialist.

## POLITICAL SCIENCE.

PRESIDENT CAPEN.

In this department are included Ancient and International Law and Economics. In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics. Students are assigned the task of making practical application

of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

Special work will be arranged in connection with some of the problems of government for those who take Political Science as a major subject, and who have completed 1, 2, and 3.

SUBJECTS.

1. — Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Tuesday, Thursday, and Saturday at* 8.45.
PRESIDENT CAPEN.

2. — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).
PRESIDENT CAPEN.

3. — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).
PRESIDENT CAPEN.

4. — Special work in problems of Government for students electing Political Science as a major subject. PRESIDENT CAPEN.

## MATHEMATICS.

PROFESSOR BROWN.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

SUBJECTS.

1. — Wells's College Algebra; Baker's Solid Geometry; Hobson and Jessop's Trigonometry; applications of Trigonometry. Required of students in all courses. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR BROWN.

2. — Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*).

3. — Nichols's Analytic Geometry. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR BROWN.

4. — Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR BROWN.

5. — Differential and Integral Calculus, Osborne's. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR BROWN.

6. — Differential and Integral Calculus (advanced course). *Monday, Wednesday, and Friday at* 10.45. PROFESSOR BROWN.

7. — Theory of Equations and Determinants; Weld's Theory of Determinants; Hanus's Elements of Determinants. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR BROWN.

## PHYSICS.

PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached

subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch of the subject there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note-book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

SUBJECTS.

1. — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

2. — Electricity and Magnetism; Heat; Light; work in Laboratory. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DOLBEAR.

3. — Advanced Studies in Electricity, Heat, and Light, with experimental work in each. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR DOLBEAR.

4. — Physical Laboratory. Mechanics and Electricity, Stewart and Gee; Sound, Heat, and Light, Glazebrook and Shaw. *Monday, Wednesday, and Friday from* 2 *to* 4. PROFESSOR HOOPER.

5. — Physical Laboratory (advanced course). Mechanics and Electricity, Stewart and Gee; Electrical Testing, Kempe; Absolute Measurement, Gray. *Monday, Wednesday, and Friday from* 2 *to* 4. PROFESSOR HOOPER.

6. — Electricity. Thompson's Dynamos; Kapp's Electrical Transmission of Energy. Recitations and lectures. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR HOOPER.

7. — Philosophy of Physics. Lectures. *Tuesday and Thursday at* 2 (*first half-year*). PROFESSOR DOLBEAR.

8. — Spencer's First Principles. *Tuesday and Thursday at* 2 (*second half-year*). PROFESSOR DOLBEAR.

## CHEMISTRY.

MR. DURKEE.

The work in Chemistry begins with the subject of General Chemistry, which is open to the students in the courses in Liberal Arts, and is required of engineering students in their third year. Instruction in this subject is given by means of lectures, recitations, and laboratory work. The lectures, which are illustrated by experiments, are intended to cover the ground of theoretical and descriptive inorganic chemistry, and to give the student a thorough knowledge of chemical theories and of the more important chemical elements and their compounds. Many of the methods for manufacturing chemical products for the market are carefully considered. The laboratory work occupies one half of the time allotted to General Chemistry. Each student has ample opportunity to test experimentally the truth of chemical theories, and to become familiar with chemical substances and their behavior. In all this work the note-book plays an important part. The note-books are inspected once a week by the instructor. By careful personal attention to each student purely mechanical work is avoided. Brief recitations are held before each lecture, and these recitations are supplemented by frequent written examinations. Remsen's text-books are used as books of reference. For those who may wish to pursue the course further four

subjects are offered. These subjects are conducted almost wholly by means of laboratory work. The design is to give the student a complete and practical training in all the common methods of analysis, so that he may be fitted to undertake successfully any variety of analytical work. The course in Organic Chemistry consists of a series of lectures on the various classes of organic compounds, together with laboratory work, to illustrate the methods of synthesis and analysis of these compounds.

SUBJECTS.

1. — General Chemistry. Lectures, recitations, and laboratory work. *Monday at* 2; *laboratory, Wednesday and Friday from* 2 *to* 4.
MR. DURKEE.

2. — Qualitative Analysis; Basic and Acid Analysis; Analysis of Salts and Natural Products. *Laboratory, Tuesday and Thursday from* 2 *to* 5. MR. DURKEE.

3. — Quantitative Analysis; Gravimetric and Volumetric Analysis; Analysis of Ores. *Laboratory, Tuesday and Thursday from* 2 *to* 5.
MR. DURKEE.

4. — Quantitative Analysis (advanced course); Analysis of Water, Food Products, etc. *Laboratory, Tuesday and Thursday from* 2 *to* 5.
MR. DURKEE.

5. — Organic Chemistry. Lectures, recitations, and laboratory work. (*Second half-year.*) —— ——

## BIOLOGY.

PROFESSOR KINGSLEY.

The work in Biology begins with the general study of the structure and physiology of selected types of animals and plants. This course is required of all students electing work in the biological department. After this course, work is outlined for the students according to their need and desires. Botany and Zoölogy are taught as continuations of the course in General Biology, while the work in Physiology, Histology, and Embryology is intended as preparatory to a medical education. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also

made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems. The equipment of the department is good, including microscopes, microtomes, reagents, preparations for the microscope, diagrams, as well as abundant material for illustration and dissection. There is also a department library, while proximity to Boston and Cambridge gives easy access to abundant library facilities.

SUBJECTS.

1. — General Biology. *Lectures, Tuesday and Thursday at* 11.45; *laboratory, Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is required of all students taking Biology for their prescribed work in science, and is introductory to all other subjects in Biology.

2. — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday, at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

This subject is offered as a collateral and elective only.

3. — Comparative Anatomy of Animals; a continuation of the animal dissection of Biology 1. Six hours of laboratory work. *Monday, Wednesday, and Friday from* 2 *to* 4 (*first half-year*).

PROFESSOR KINGSLEY.

4. — Botany; a continuation of the study of plants of Biology 1. Six hours of laboratory work. *Monday, Wednesday, and Friday from* 2 *to* 4 (*second half-year*). PROFESSOR KINGSLEY.

5. — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*

PROFESSOR KINGSLEY.

6. — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

7. — The History of Zoölogy. One lecture a week for the first half-year. PROFESSOR KINGSLEY.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

8. — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

9.—General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Tuesday, Thursday, and Saturday at* 8.45 (*second half-year*).

PROFESSOR KINGSLEY.

## GEOLOGY.

PROFESSOR MARSHALL.

The regular course in Geology is preceded by a course in Mineralogy, given during the first half-year. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals, systematically arranged in wall-cases, is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning the course practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided, for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the course, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ*.

SUBJECTS.

1.—Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

2.—Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45. (*second half-year*). PROFESSOR MARSHALL

## ASTRONOMY.

1. — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year*). PROFESSOR DOLBEAR.

## DRAWING.

PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used.

### SUBJECTS.

1. — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week* (*second half-year*).

PROFESSOR ANTHONY, MR. DANIELS.

2.—Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* PROFESSOR ANTHONY, MR. DANIELS.

3.—Machine Drawing; Gearing, Elements of Design. *Two hours a week for the year.* PROFESSOR ANTHONY.

4.—Freehand Drawing. *Two hours a week (first half-year).* MR. DANIELS.

5.—Topographical Drawing, with Field Work, Chain, Compass, Level, and Transit. *Three hours a week for the year.* MR. DANIELS.

## ENGINEERING.

PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

SUBJECTS.

1.—Surveying. Lectures and recitations. *Two hours a week for the year.* MR. DANIELS.

2.—Applied Mechanics. *Four hours a week for the year.* PROFESSOR BRAY.

In addition to the Mathematics required by way of preparation for other subjects in Engineering, students electing Engineering 2 must have taken Calculus.

3.—Steam Engineering, Theory and Construction. *Four hours a week (second half-year).* PROFESSOR BRAY.

This requires as preparation the ordinary Mathematics, Calculus, the Physics and Mechanics of the preceding half-year (see Civil Engineering Course), and may be taken simultaneously with the Calculus and Mechanics of the second half of the third year of the Civil Engineering Course.

4. — Civil Engineering. *Four hours a week for the year.*
PROFESSOR BRAY.

5. — Road Engineering. *Three hours a week (first half-year); two hours a week (second half-year).* PROFESSOR BRAY.

Engineering 4 and 5 must be preceded by the Mathematics and Mechanics of the first three years of the Civil Engineering Course.

6. — Marine Engineering. *Four hours a week (first half-year).*
PROFESSOR BRAY.

This subject is open to students who have taken the Drawing, Mathematics, Mechanics, and Steam Engineering of the Engineering Course.

7. — Marine Architecture and Shipbuilding. *For graduates of the Engineering Course only.* PROFESSOR BRAY.

## PHYSICAL TRAINING.

MR. DURKEE.

Regular exercise in the gymnasium is required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Program Groups

## FOR 1894-95.

The arrangement of recitation hours for the college year 1894-95 is given in the subjoined table. No student is allowed to take more than one subject in any of these groups, except in the case of half-subjects that are not given in the same half-year. Such subjects are indicated by the small roman numerals (i) or (ii) following the name of the subject and showing the half-year in which it is given. The days of the week are indicated by the abbreviations M., Tu., W., Th., F., and S.

| | | |
|---|---|---|
| (M. W. F. at 8.45.)<br>French 2.<br>French 3.<br>History 5. | (M. W. F. at 3.)<br>Greek 1.<br>French 4.<br>English Lit. 2 (ii).<br>English Lit. 3 (i).<br>Philosophy 8.<br>Chemistry 1 (lab. W. F.).<br>Physics 4 and 5 (lab.).<br>Biology 3, 4, 5, 6, 8 (lab.). | (Tu. Th. S. at 10.45.)<br>Latin 1.<br>Italian.<br>Philosophy 3 (i).<br>Philosophy 4 (ii).<br>Philosophy 5 (i).<br>Philosophy 6 (ii).<br>History 1.<br>History 8 (i).<br>Physics 2. |
| (M. W. F. at 9.45.)<br>German 2.<br>English Lit. 4 (ii).<br>English Lit. 5 (i).<br>Mathematics 1.<br>Physics 3. | (M. W. F. at 4.)<br>Greek 8.<br>Physical Training<br>(Nov. 15 to March 15). | (Tu. Th. S. at 11.45.)<br>Greek 3.<br>German 3.<br>Philosophy 1 (i).<br>Philosophy 2 (ii).<br>Mathematics 2 (ii).<br>Biology 1 (Tu., Th.).<br>Oratory 1.<br>Astronomy. |
| (M. W. F. at 10.45.)<br>English 2 (i).<br>English 3 (ii).<br>English 8 (i)<br>English Lit. 7 (ii).<br>History 4 (ii).<br>Mathematics 6.<br>Mathematics 7.<br>Physics 1.<br>German 5. | (Tu. Th. S. at 8.45.)<br>English 4 (i).<br>English 5 (ii).<br>French 1a.<br>German 1a.<br>Latin 4.<br>Greek 7.<br>Political Science 1.<br>Mathematics 5.<br>Biology 2 (i).<br>Biology 9 (ii). | (Tu. Th. S. at 2.)<br>English 1 (Tu.).<br>Oratory 2.<br>Physics 7 (i).<br>Physics 8 (ii).<br>Chemistry 2, 3, 4 (lab.).<br>Biology 1 (lab.). |
| (M. W. F. at 11.45.)<br>English 6 (i).<br>English 7 (ii).<br>Latin 2.<br>German 4.<br>Mathematics 3 (i).<br>Mathematics 4 (ii).<br>Physics 6. | (Tu. Th. S. at 9.45.)<br>Latin 3.<br>Greek 1.<br>Greek 5.<br>French 1b.<br>German 1b.<br>History 6 (i).<br>History 7 (ii).<br>Political Science 2 (i)<br>Political Science 3 (ii).<br>Geology 1 (i).<br>Geology 2 (ii). | (Tu. Th. S. at 3.)<br>Chemistry 2, 3, 4 (lab.).<br>Biology 1 (lab.).<br>Hebrew 2. |
| (M. W. F. at 2.)<br>Greek 2.<br>Greek 6.<br>Philosophy 7.<br>Chemistry 1 (lect. M. lab. W. F.).<br>Physics 4 and 5 (lab.).<br>Biology 3, 4, 5, 6, 8 (lab.). | | (Tu. Th. S. at 4.)<br>Latin 7.<br>Chemistry 2, 3, 4 (lab.). |

There are no college exercises on Saturday afternoon.

# Engineering Courses.

Two courses in Engineering are provided, each occupying four years. The course in Electrical Engineering leads to the degree of Bachelor of Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The degree of Bachelor of Civil Engineering is given on the same conditions to students who have pursued the course in Civil Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the Courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

## ELECTRICAL ENGINEERING.

The aim of the course in this department, leading to the degree of Bachelor of Electrical Engineering, is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

The electrical laboratory is open to students at all hours of the day, and each student is required to complete a fixed programme of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of various dynamos and motors; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

The electrical workshop possesses a fine outfit of machine tools, including planer, shaper, drill, universal milling machine, engine lathes, speed lathes, turret lathe, and grinder. Here is constructed by students much of the apparatus in daily use in the laboratory.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 92.)

The plan of the course is as follows: —

### FRESHMAN YEAR.

#### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. SANBORN, MR. MYRICK.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection; Lettering. *Three hours a week.*

PROFESSOR ANTHONY, MR. DANIELS.

**Freehand Drawing.** — Models, Casts, Technical Sketching, etc. *Two hours a week.* MR. DANIELS.

**Shop Work.** — Woodwork; Carpentry; Pattern-Making; Turning. *Two hours a week.* (See note.[1])

**Rhetoric.** — Extemporaneous Composition. *Two hours a week.* PROFESSOR SHIPMAN.

**French.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

or,

**German.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

### Second Term.

**Mathematics.** — Spherical Trigonometry; Physical Arithmetic. *Four hours a week.* MR. SANBORN, MR. MYRICK.

**Descriptive Geometry.** — Problems of Points, Lines, and Planes; Tangencies; Intersections; Elements of Perspective. Lectures and recitations. *Four hours a week.* PROFESSOR ANTHONY, MR. DANIELS.

**Mechanical Drawing.** — Orthographic Projection; Screw Threads, Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* PROFESSOR ANTHONY, MR. DANIELS.

**Mechanics.** — Lectures. *Three hours a week.* PROFESSOR HOOPER.

**Rhetoric.** — Extemporaneous Composition. *One hour a week.* PROFESSOR SHIPMAN.

**French.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* MR. LEWIS.

or,

**German.** — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.* PROFESSOR FAY.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Four hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

[1] Instruction in Shop Work is given at the Bromfield-Pearson School.

**Elements of Mechanism.** — Construction of Cams; Linkwork; Gears, etc. *One hour a week.* MR. SANBORN.

**Drawing.** — Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**French.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.* MR. LEWIS.

or,

**German.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hours a week.* PROFESSOR FAY.

ELECTIVE. — In addition to the above, one of the following elective studies: —

**English Literature.** — 1840 to the present time. *Three hours a week.* PROFESSOR MAULSBY.

**Rhetoric.** — Carpenter's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* PROFESSOR BROWN.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. MYRICK.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *Two hours a week.* (See note, page 64.)

**Drawing.** — Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**French.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.* MR. LEWIS.

or,

**German.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; one essay in German. *Three hours a week.* PROFESSOR FAY.

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Chemistry.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.* MR. DURKEE.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations; Recitations and Lectures. *Two hours a week.* MR. MYRICK.

**Physical Laboratory.** — Magnetic and Electrical Measurements; Construction of Apparatus; Recitations and Lectures. *Two hours a week.* MR. MYRICK.

**Drawing.** — Advanced Machine Drawing; Elements of Design. *One and a half hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Chipping; Filing; Polishing; Bolt Cutting; Tapping; Turning; Boring, etc. *One and a half hours a week.* (See note, page 64.)

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Steam Engineering.** — Description of Types of Engines and Boilers; Theory and Construction of Details; Dimensions for Required Power; Steam Engine Indicators; Calorimeters; Valve Gears and their Adjustment. *Four hours a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring; Recitations and Lectures. *Two hours a week.* MR. MYRICK.

**Physical Laboratory.** — Magnetic and Electrical Measurements; Construction of Apparatus. *Two hours a week.* MR. MYRICK.

**Drawing.** — Boiler and Steam Engine Details. *One and a half hours a week.* PROFESSOR ANTHONY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Theory of Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Kinematics of Machines.** — General Theory of Machines; Theory of Prime Movers; Construction and Location of Machines; Designs and Reviews of Special Machines. *Two hours a week.*
PROFESSOR BRAY.

**Electricity.** — Thompson's Dynamo Electric Machinery; Kapp's Electrical Transmission of Energy; Systems of Lighting; Lectures and Recitations. *Four hours a week.*
PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Dynamo Testing; Accumulators; Photometry of Arc and Incandescent Lamps; Testing of Lines and Conductors.
PROFESSOR HOOPER.

**Drawing.** — Machine Designing. *Three hours a week.*
PROFESSOR ANTHONY.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

### Second Term.

**Electricity.** — Fleming's Induction of Currents; Design of Dynamos; Electrical Railways; Recitations and Lectures. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Construction of Electrical Machinery; Special Investigations. PROFESSOR HOOPER.

**Technical Applications of Electricity.** — Lectures on Telegraph. Telephone, Electro-Metallurgy, etc. *Two hours a week.*
PROFESSOR DOLBEAR,

**Political Economy.** — History of Finance; Banking; Taxation; Principles of Civil Government; Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department, leading to the degree of Bachelor of Civil Engineering, has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The course in Road Engineering includes study in the classroom of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of

engines and boilers of various kinds: Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements stated under the Graduate Department, page 92. The plan of the course is as follows: —

## FRESHMAN YEAR.

### First Year.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection; Lettering. *Three hours a week.* PROFESSOR ANTHONY, MR. DANIELS.

**Freehand Drawing.** — Models, Casts, Technical Sketching. *Two hours a week.* MR. DANIELS.

**Shop Work.** — Woodwork; Carpentry; Pattern-Making; Turning. *Two hours a week.* (See note, page 64.)

**Rhetoric.** — Extemporaneous Composition. *Two hours a week.* PROFESSOR SHIPMAN.

**French.** — Edgren's Grammar; Super's French Reader. *Four hours a week.* MR. LEWIS.

or,

**German.** — Joynes-Meissner, Grammar; Bernhardt, Im Zwielicht, II. *Four hours a week.* PROFESSOR FAY.

### Second Term.

**Mathematics.** — Spherical Trigonometry; Physical Arithmetic. *Four hours a week.* MR. SANBORN.

**Descriptive Geometry.** — Problems of Points, Lines, and Planes; Tangencies; Intersections; Elements of Perspective. Lectures and recitations. *Four hours a week.* PROFESSOR ANTHONY, MR. DANIELS.

**Mechanical Drawing.** — Orthographic Projection; Screw Threads, Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* PROFESSOR ANTHONY, MR. DANIELS.

**Mechanics.** — Lectures. *Three hours a week.* PROFESSOR HOOPER.

**Rhetoric.** — Extemporaneous Composition. *One hour a week.* PROFESSOR SHIPMAN.

**French.** — Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière (the play); Grammar and Composition. *Three hours a week.* MR. LEWIS.

or,

**German.** — Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Composition. *Three hours a week.* PROFESSOR FAY.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Four hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Surveying.** — Principles of Land Surveying; Use and Construction of Instruments. Lectures and recitations. *Two hours a week.* MR. DANIELS.

**Field Work.** — Work with Chain, Compass, and Transit. *One and a half hours a week.* MR. DANIELS.

**Drawing.** — Plotting. *One and a half hours a week.* MR. DANIELS.

**French.** — Readings from French History (Super's collection); H. Martin, Jeanne Darc; Racine, Athalie. *Three hours a week.* MR. LEWIS.

or,

**German.** — Lessing, Minna von Barnhelm; Schiller, Wilhelm Tell; Wieland, Oberon; Grammar and Composition. *Three hours a week.* PROFESSOR FAY.

ELECTIVE. — In addition to the above, one of the following elective studies: —

**English Literature.** *Three hours a week.* PROFESSOR MAULSBY.

**Rhetoric.** — Carpenter's; Themes; Extemporaneous Composition. *Three hours a week.* PROFESSOR SHIPMAN.

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* PROFESSOR BROWN.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Mathematical Astronomy.** — *Two hours a week.* PROFESSOR BROWN.

**Surveying.** — Topographical, Mine, Hydrographic, and Railroad Surveying. Lectures and recitations. *Two hours a week.* MR. DANIELS.

**Drawing.** — Plotting and Topographical Drawing; Sketching and Brush Shading. *One and a half hours a week.* MR. DANIELS.

**Field Work.** — Work with Transit and Level. *One and a half hours a week.* MR. DANIELS.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *Two hours a week.* (See note, page 64.)

**French.** — Molière, L'Avare; Corneille, Polyeucte; George Sand, Les Maîtres Mosaïstes; two essays in French. *Three hours a week.* MR. LEWIS.

or,

**German.** — Heine, Die Harzreise; Müller, Geschichte des deutschen Volkes, §§ 532 ff. (Struggle against the French Revolution); Goethe, Hermann und Dorothea; one essay in German. *Three hours a week.* PROFESSOR FAY.

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

**Chemistry.** — Inorganic Chemistry, with Recitations, Lectures, and Laboratory Work. *Four hours a week.* MR. DURKEE.

**Drawing.** — Topographical Drawing. *One and a half hours a week.* MR. DANIELS.

**Field Work.** — Work with Plane Table and Stadia. *One and a half hours a week.* MR. DANIELS.

OPTION.[1] — **Electricity.** — Units; Theory of Measurements; Electrical Calculations. *Two hours a week.* PROFESSOR HOOPER.

or,

**Geology.** — Descriptive and Practical Geology. *Two hours a week.* PROFESSOR MARSHALL.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* PROFESSOR BROWN.

**Mechanics.** — Applied Mechanics. *Four hours a week.* PROFESSOR BRAY.

[1] Students electing Electricity in the Junior year will continue that subject in the Senior year; and those electing Geology and Chemistry in the Junior year will continue Chemistry.

**Steam Engineering.** — Description of Types of Engines and Boilers; Theory and Construction of Details; Dimensions for Required Power; Steam Engine Indicators; Calorimeters; Valve Gears and their Adjustment. *Four hours a week.* PROFESSOR BRAY.

**Drawing.** — Machine Designing. *Three hours a week.* PROFESSOR ANTHONY.

OPTION. — **Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. *Two hours a week.* PROFESSOR HOOPER.

or,

**Chemistry.** — Basic Qualitative Analysis; Lectures and Laboratory Work. *Three hours a week.* MR. DURKEE.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Theory of Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Civil Engineering.** — Strength of Materials; Laboratory Work with Testing Machine; Stability of Structures of Stone, Wood, and Iron. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Railways and Highways. Lectures and recitations. *Three hours a week.* PROFESSOR BRAY.

**Drawing.** — Stereotomy. *One and a half hours a week.* MR. DANIELS.

**Field Work.** — Location of Roads and Railroads. *One and a half hours a week.* MR. DANIELS.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

OPTION. — **Electricity.** — Thompson's Dynamo-Electric Machinery; Kapp's Transmission of Energy; Systems of Lighting. Recitations and lectures. *Four hours a week.* PROFESSOR HOOPER.

or,

**Chemistry.** — Qualitative Analysis, continued. Acid Analysis; Analysis of Salts and Natural Products. *Three hours a week.* MR. DURKEE.

### Second Term.

**Civil Engineering.** — Bridge and Roof Building; Drainage and Sewerage; Hydraulics; Masonry Construction. *Four hours a week.* PROFESSOR BRAY.

**Road Engineering.** — Economic Considerations, with Designing of Mechanical Structures. *Two hours a week.* PROFESSOR BRAY.

**Drawing.** — Bridges and Roof Trusses; Water Works and Sewerage Systems. *Two hours a week.* MR. DANIELS.

**Political Economy.** — History of Finance; Banking; Taxation; Principles of Civil Government; Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* PROFESSOR SHIPMAN.

OPTION. — **Electricity.** — Fleming's Induction of Currents; Design of Dynamos; Electrical Railways. Recitations and lectures. *Four hours a week.* PROFESSOR HOOPER.

or,

**Chemistry.** — Quantitative Analysis, Gravimetric and Volumetric. *Four hours a week.* MR. DURKEE.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

| Freshman Year. | | Sophomore Year. | | Junior Year. | | Senior Year. | |
|---|---|---|---|---|---|---|---|
| First Half. | Second Half. | First Half. | Second Half. | First Half. | Second Half. | First Half. | Second Half. |
| **ELECTRICAL — B. E. E.** | | | | | | | |
| Mathematics.<br>Mechan. Draw'g.<br>Freehand Draw-ing.<br>Shop Work.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Descriptive Geometry.<br>Mechan. Draw'g.<br>Physics.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Physics.<br>Elements of Mechanism.<br>Drawing.<br>German (or French). | Mathematics.<br>Physics.<br>Physical Lab'y.<br>Shop Work.<br>Drawing.<br>German (or French). | Mathematics.<br>Mechanics.<br>Chemistry.<br>Electricity.<br>Physical Lab'y.<br>Drawing.<br>Shop Work. | Mathematics.<br>Mechanics.<br>Steam Engineer-ing.<br>Electricity.<br>Physical Lab'y.<br>Drawing. | Mathematics.<br>Kinematics of Machines.<br>Electricity.<br>Electrical Lab'y.<br>Drawing.<br>English Comp. | Polit. Economy.<br>Electricity.<br>Electrical Lab'y.<br>Technical Appli-cations of Elec-tricity.<br>English Comp.<br>Thesis. |
| **CIVIL — B. C. E.** | | | | | | | |
| Mathematics.<br>Mechan. Draw'g.<br>Freehand Draw'g.<br>Shop Work.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Descriptive Geometry.<br>Mechan. Draw'g.<br>Physics.<br>Rhetoric.<br>French (or German). | Mathematics.<br>Physics.<br>Surveying.<br>Field Work.<br>Drawing.<br>Elective (English).<br>German (or French). | Mathematics.<br>Physics.<br>Mathemat. Astr.<br>Shop Work.<br>Surveying.<br>Field Work.<br>Drawing.<br>German (or French). | Mathematics.<br>Mechanics.<br>Chemistry.<br>Field Work.<br>Drawing.<br>Electricity (or Geology). | Mathematics.<br>Mechanics.<br>Steam Engineer-ing.<br>Drawing.<br>Electricity (or Chemistry). | Mathematics.<br>Civil Engineer'g.<br>Road Engineer'g.<br>Field Work.<br>Drawing.<br>Electricity (or Chemistry).<br>English Comp. | Polit. Economy.<br>Civil Engineer'g.<br>Road Engineer'g.<br>Drawing.<br>Electricity (or Chemistry).<br>English Comp.<br>Thesis. |

# Buildings and Equipment.

## BUILDINGS.

The College buildings are: Ballou Hall, containing recitation rooms, and the chemical and physical laboratories; Barnum Museum, containing the natural history collections, and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; and three dormitories, — East Hall, West Hall, and Dean Hall. The Bromfield-Pearson School building is available for the technical courses of the College. A new building is in process of erection, and will be completed during the present college year, to contain rooms for students and a dining-hall; and Metcalf Hall, for the accommodation of women students, will be ready for use in the college year 1894–95. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains twenty-nine thousand five hundred bound volumes, and about thirteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. On the tables are sixty periodicals; and in the same building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.30 A. M. to 12.45 P. M., and from 2 to 5 P. M. It is also open Monday and Thursday from 7 to 9.30 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering six hundred bound volumes and about one thousand pamphlets.

## MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late P. T. Barnum, who also gave the college a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings will soon be erected. It will afford exhibition rooms for the mineralogical and geological collections, as well as additional laboratories for the biological department.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it also contains many rare and interesting species as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the Southern and Western States. The geological collection contains representatives of the various types of rocks as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the species, in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the departments of Biology and Geology are in the Museum building. The

geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratory is equipped with all facilities for elementary instruction as well as for research work in the lines of Anatomy, Histology, and Embryology.

A department library of Natural History has recently been established in the Barnum Museum. It already contains six hundred volumes and about a thousand pamphlets. Besides the elementary works upon Botany, Zoölogy, and Geology it contains numerous series of journals and proceedings of societies, most of the sets being complete since 1870.

## GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room, for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, and includes fourteen Sargent developing machines. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime and electric lights. In the field of electricity the equipment is especially good, including standards of resistance,

of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electronometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a metre in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a small alternator, a special 4,000-watt machine for experimental purposes, and a pair of 110-volt 1,500-watt machines for the Library three-wire installation, and for charging the storage battery. Three other machines are in process of construction, — one of 12 kilo-watts and 110 volts. Steam power is furnished by two Whittier tubular boilers.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting. Connected with the laboratories is a workshop containing several lathes, with an outfit of wood and metal working tools used in the construction and repair of apparatus. Most of the rough and some of the fine apparatus used in the dynamo-room and laboratories is manufactured in this room.

## CHEMICAL LABORATORY.

The Chemical Laboratory has desks for forty-three students, and is supplied with reagent bottles, sinks, and hoods. The

lighting is by electricity. The store-room contains a full stock of ordinary chemical apparatus, a full set being furnished to each student working in the laboratory. Students in the advanced courses work in the private laboratory of the professor in charge, and have access to the weighing-room, where there are accurate chemical balances for quantitative work. Standard books of reference are also at hand.

### BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson Building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The complete equipment will be in readiness for the coming year and will include a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting-rooms are in the third story and separated from the noise and vibration of the shops. Abundant and uniform light is provided by means of large skylights on the northerly side.

# General Information.

## RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere. A Sunday-school is maintained in connection with Sunday worship, and students are made welcome to classes studying the Bible and subjects bearing upon the conduct of life.

The RUSSELL LECTURE, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator.

## ADMISSION AND REGISTRATION.

The first examinations for admission to the College of Letters are held on the three days immediately following the annual Commencement in June, and the second examinations on three successive days in September, the last being the opening day of the college year. The program of the examinations may be found in the College Calendar on pages 5 and 6. Entering students are required to register at the Secretary's office before taking their examinations. Those entering on certificates must file the proper blanks (to be obtained of the Secretary of the

Faculty) at least one month before the opening of the college year. This is necessary for a thorough examination by the Faculty of the statements submitted, and any one who does not comply with the full requirements relating to certificates may be required to take the examinations as a condition of admission to the College.

Every student who has been a resident one year or more at the College is required to register at the Secretary's office before noon of the opening day of the college year, and must then file, on blanks furnished for the purpose, two statements of his plan of study for the coming half-year, one to be kept on file by the Secretary, the other for the use of his major instructor. The following day will be devoted to whatever consultations with students instructors may appoint. No petitions concerning the courses of students in regular standing, except such as may be made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty on the evening of this day.

Instructors will post their class lists before 8.45 A. M., on the morning of the third day, and all students will be expected to meet their program appointments on and after that day. No student will be recognized as a member of a class whose name does not appear in the instructor's list of that class.

The same regulations are in force at mid-year and apply to all students, the arrangements for the first three days of the second half-year being the same as those for the first three days of the first half-year.

Students entering Tufts College after pursuing study in any other college of equal grade are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. All applicants for special courses shall satisfy the instructors in those courses that they are prepared to pursue the same.

2. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each course pursued by him. This rule shall apply to the work of the term as well as to examinations.

3. Special students under rule 2 who fail in any course will be required to take that course again the next year.

4. Special students whose program hours number fifteen or more will be treated, as regards conditions, in the same way as regular students.

5. A special student, on leaving College, shall be entitled to a certificate giving the per cent attained in each course pursued, and signed by the President and Secretary.

6. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

## TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of two weeks at Christmas, three days at Thanksgiving, and three at Fast Day.

## EXPENSES.

The charge for instruction is *one hundred dollars* a year.

Students in the laboratories are charged for certain materials used and for breakage. The charge to engineering students for shop work is *twenty dollars* a year, and other students who take shop work are charged extra.

A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the College buildings, except Paige Hall. Any damage done by students to College property is charged in the term bills.

Beginning with the college year 1894–95, every student who enters the College of Letters will be required to deposit with the Treasurer of the College either a bond with two satisfactory sureties for the sum of *one hundred and fifty dollars*, or the sum of *seventy-five dollars* in cash, which sum, with interest at the rate of four per cent yearly, will be returned when the student leaves the College, his term bills first being paid in full.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement.

Students board in commons at $3.50 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student. Students furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition | $100.00 | $100.00 |
| Gymnasium | 4.00 | 4.00 |
| Half room-rent | 15.00 | 75.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Total | $255.00 | $369.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships and other aids must be made to the Faculty on or before the first day of November; and if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

Scholarships and gratuities will not be available to any student until all college dues for the year, other than those for which the scholarship or gratuity is to apply, have been paid. No scholarship will exceed one hundred dollars, and no gratuities will be granted to any student entering the College after 1893.

The following scholarships, of one hundred dollars each, are awarded annually: —

THREE STATE SCHOLARSHIPS, — Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS, — Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS, — Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS, — Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP, — Founded by the late Charles Robinson, LL. D., of Newton.

THE PATTERSON SCHOLARSHIP, — Founded by A. J. Patterson, D. D., of Roxbury, in the name of A. J. and Jane L. Patterson.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP, — Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP, — Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP, — Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP, — Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP, — Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP, — Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP, — Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP, — Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP, — Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP, — Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP, — Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP, — Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP, — Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP, — Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP, — Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP, — Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP, — Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU 2d MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP, — Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP, — Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP, — Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE J. D. PEIRCE SCHOLARSHIP, — Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857, — Founded by Heman Allen Dearborn and William Newhall Eayrs, for the benefit of women students.

OLNEY ARNOLD, of Pawtucket, R. I., and ISAAC P. T. EDMANDS, of Boston, each pay one hundred dollars annually for a term of years.

The following UNIVERSALIST PARISHES have provided for annual payments of one hundred dollars each: —

Newton, Boston (Columbus Avenue), Somerville (Cross Street), Roxbury.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP, — Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

APPOINTMENTS. — The pay of a monitor is *twenty dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES. — In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 2, of the seventeenth and eighteenth sections of Chapter xxxiv. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent) in his major subject, and Grade B (at least seventy-five per cent) in the collateral subjects.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In two years preceding graduation, —

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for Honors: — Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a subject to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on pages 25 and 32.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 25 and 32 for the attainment of that degree.

THE DEGREE OF BACHELOR OF CIVIL ENGINEERING, or of BACHELOR OF ELECTRICAL ENGINEERING, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Civil Engineering or of Electrical Engineering after a graduate course of one year in the Engineering department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, and ELECTRICAL ENGINEER, see Graduate Department, page 92.

# Graduate Department.

## EXECUTIVE BOARD OF THE FACULTY OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.
FRANK P. GRAVES, A.M., PH. D.

## STUDENTS.

### Fellows.

KENYON, FREDERICK COURTLAND, *Lincoln, Neb.* — *Dean Hall*, 1.
S. B. (Nebraska University), 1892. Instructor in Geology, Nebraska University, 1891–92. *Biology. Olmstead Fellow in Natural History.*

SIMMONS, ORVILLE LOGAN . *Goshen, Ind.* — *Mr. Fillebrown's.*
S. B. (Purdue University), 1893. *Biology. Miner Fellow in Natural History.*

### Candidates for the Degree of Master of Arts.

BROWN, HENRIETTA NOBLE . *College Hill, Professors Row.*
A. B., 1893. *Biology and Chemistry.*

HATHAWAY, CHARLES AUGUSTUS . . . . *Stamford, Conn.*
A. B., 1890. *Geology.*

MCCOLLESTER, LEE SULLIVAN . . . . . *Detroit, Mich.*
A. B., 1881; B. D., 1884. *Church History.*

NICHOLS, MINNIE ADELAIDE . . . . . *Stoneham.*
A. B. (Boston University), 1893. *Classical Philology.*

PROUTY, WILLIS JAMES . . . . . *Meriden, Conn.*
A. B., 1887. *Latin.*

TOWLE, GEORGE GILMAN . . . . . *Dover, N. H.*
A. B., 1891. *Greek and Latin.*

TUCKER, CHARLES ROLLIN . . . *Stoughton. East Hall, 8.*
Ph. B., 1891. *Chemistry and Physics.*

WADE, CHARLES ST. CLAIR, *West Somerville. East Hall, 24.*
*Classical Philology.*

## INSTRUCTION.

Instruction in the Graduate Department is given by the Faculty of the College of Letters and of the Divinity School. Such regular subjects as are at present offered for graduates only may be found indicated in the statements of the programs of the several departments of instruction, on page 35 and following pages. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of A. M. on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged with the instructor in whose department the work is to be done.

The degrees offered by this department are Master of Arts, Civil Engineer, Electrical Engineer, and Doctor of Philosophy.

## DEGREES.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of A. B., or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of A. B., who shall complete an approved course of advanced study in one, or at the most two, departments, during a residence of not less than one year, and shall prepare a thesis and pass a satisfactory examination upon the work performed.

Graduates of Tufts College who have taken the degree of Ph. B., or graduates of other colleges holding a degree of simi-

lar grade, must complete the requirements for the degree of A. B. before they can be entered as students in courses leading to the degree of A. M.

Candidates for this degree must make a written application to the Executive Board of the Faculty of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree. The condition of residence may be waived by special permission, but in this case the degree may not be taken with less than two years' graduate study.

THE DEGREE OF CIVIL ENGINEER OR ELECTRICAL ENGINEER will be conferred upon Bachelors of Civil or Electrical Engineering who shall satisfactorily pursue advanced professional study at the College for one year and present a thesis, or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility. A certain amount of professional study will be assumed, upon which a thesis shall be presented. The regulations concerning application for this degree are the same as for the degree of A. M.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainments are necessary, and especially the power of original thought and independent investigation. The whole course of study must at present be devoted to one subject, and a thesis must be presented which shall give evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF A. M. may be taken by candidates for the degree of Ph. D. at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR PH. D.

The departments at present open to candidates for this degree are Classical Philology, Biology, and Chemistry.

IN CLASSICAL PHILOLOGY the candidate for the degree of Ph. D. must be able to read Greek and Latin fluently at sight and to use German authorities when necessary; he must have completed in residence Latin 6 and 7 and two courses out of Greek 8, 9, and 10, as well as equivalents for all work preceding these subjects; and he must present a satisfactory thesis on some subject of original research in Classical Philology.

IN BIOLOGY, candidates for the degree of Ph. D. must have a good working knowledge of French and German before beginning their work; they must carry on research in Animal Morphology for at least two years in the College Laboratory, and at least one summer at some seashore station; they must present acceptable thesis, based upon the work done, and must pass an examination upon General Zoölogy.

IN CHEMISTRY, candidates for the degree of Ph. D. must be able to translate scientific German readily and accurately before beginning their work; they must also have completed a preliminary course in Organic Chemistry (Chemistry 5) with distinction; they must carry on research for at least two years in the College Laboratory in Inorganic or Organic Chemistry; they must present satisfactory theses on this work; and also pass examinations upon Theoretical Chemistry.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY. — In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The

lar grade, must complete the requirements for the degree of A. B. before they can be entered as students in courses leading to the degree of A. M.

Candidates for this degree must make a written application to the Executive Board of the Faculty of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree. The condition of residence may be waived by special permission, but in this case the degree may not be taken with less than two years' graduate study.

THE DEGREE OF CIVIL ENGINEER OR ELECTRICAL ENGINEER will be conferred upon Bachelors of Civil or Electrical Engineering who shall satisfactorily pursue advanced professional study at the College for one year and present a thesis, or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility. A certain amount of professional study will be assumed, upon which a thesis shall be presented. The regulations concerning application for this degree are the same as for the degree of A. M.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainments are necessary, and especially the power of original thought and independent investigation. The whole course of study must at present be devoted to one subject, and a thesis must be presented which shall give evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF A. M. may be taken by candidates for the degree of Ph. D. at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR PH. D.

The departments at present open to candidates for this degree are Classical Philology, Biology, and Chemistry.

In CLASSICAL PHILOLOGY the candidate for the degree of Ph. D. must be able to read Greek and Latin fluently at sight and to use German authorities when necessary; he must have completed in residence Latin 6 and 7 and two courses out of Greek 8, 9, and 10, as well as equivalents for all work preceding these subjects; and he must present a satisfactory thesis on some subject of original research in Classical Philology.

In BIOLOGY, candidates for the degree of Ph. D. must have a good working knowledge of French and German before beginning their work; they must carry on research in Animal Morphology for at least two years in the College Laboratory, and at least one summer at some seashore station; they must present acceptable thesis, based upon the work done, and must pass an examination upon General Zoölogy.

In CHEMISTRY, candidates for the degree of Ph. D. must be able to translate scientific German readily and accurately before beginning their work; they must also have completed a preliminary course in Organic Chemistry (Chemistry 5) with distinction; they must carry on research for at least two years in the College Laboratory in Inorganic or Organic Chemistry; they must present satisfactory theses on this work; and also pass examinations upon Theoretical Chemistry.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY. — In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The

income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History subjects upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single reelection, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 84 applies to all students of the College, graduate as well as undergraduate.

# DIVINITY SCHOOL.

# Calendar.

1893.

OCT. 4. Examination for Admission, in Miner Theological Hall, beginning at 9 A. M.
OCT. 5. School Year begins, Thursday morning.
OCT. 8. Russell Lecture.
DEC. 20. Christmas Recess begins, Wednesday evening.

1894.

JAN. 3. Christmas Recess ends, Wednesday evening.
JUNE 5. Prize Reading. Greenwood Prizes.
JUNE 15. Class Day.
JUNE 17. Baccalaureate Sermon.
JUNE 20. Commencement.

SUMMER VACATION, THIRTEEN WEEKS.

SEPT. 19. Examination for Admission, in Miner Theological Hall, beginning at 9 A. M.
SEPT. 20. School Year begins, Thursday morning.
SEPT. 23. Russell Lecture.
DEC. 19. Christmas Recess begins, Wednesday evening.

# Faculty of the Divinity School.

ELMER H. CAPEN, D. D., *President.*
*In charge of Political Economy.*

CHARLES H. LEONARD, D. D., *Dean.*
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D. D.
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A. M., B. D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A. M., B. D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A. M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A. M., B. D.
*Woodbridge Professor of Applied Christianity.*

ANSON B. CURTIS, PH. D.
*Instructor in Hebrew.*

## NON-RESIDENT LECTURERS.

HENRY I. CUSHMAN, D. D.
*Lecturer on Methods of Biblical Study.*

DAVID G. LYON, PH. D.
*Lecturer on Assyriology.*

CHARLES W. BIDDLE, D. D.
*Lecturer on the Pastoral Office.*

# Students.

## Senior Class.

| | | |
|---|---|---|
| Ball, Clarence Leon . . . | *Cambridge* . . . | Paige Hall, 19. |
| Brown, Allen . . . . . | *Cadillac, Mich.* . | Paige Hall, 12. |
| Butler, Thomas . . . . . | *Philadelphia, Pa.* . | Paige Hall, 29. |
| Dickins, Curtis Hoyt . . . | *Philadelphia, Pa.* . | Paige Hall, 31. |
| Foster, Augustine Norwood, | *Meriden, Conn.* . | Paige Hall, 18. |
| Grose, Arthur Wilder, A. B., | *Abington* . . . | Paige Hall, 6. |
| Hoyt, Hervey Hastings . . | *Peabody, Kan.* . | Methuen. |
| Leighton, George Edward . | *Dexter, Me.* . . | Paige Hall, 8. |
| Morrison, Ira Daniel . . . | *Brookings, So. Dak.* | Paige Hall, 30. |
| Perkins, Frederic Williams, A. B. . . . . | *Roxbury* . . . | Paige Hall, 7. |
| Petrie, Omer Genere . . . | *El Dorado, O.* . | Paige Hall, 17. |

## Middle Class.

| | | |
|---|---|---|
| Blair, Arthur Adolphus . . | *Manchester, N. H.*, | Paige Hall, 13. |
| Cardall, Alfred James . . | *Bay City, Mich.* . | Paige Hall, 24. |
| Cobb, Joseph Fernald, A. B., | *Deering, Me.* . . | Paige Hall, 11. |
| Roscoe, Tom, M. D. . . . (Vt. Med. Coll.) | *Somerville* . . . | 178 Central St. |
| Smith, Ashley Auburn . . | *Auburn, Me.* . . | Paige Hall, 1. |
| Tillinghast, James Dannals, | *Buffalo, N. Y.* . . | 31 George St. |
| Wells, Charles Henry . . . | *Barre, Vt.* . . . | Paige Hall, 32. |

## Junior Class.

| | | |
|---|---|---|
| Blackford, Frank, B. S. . . (Nat. Norm. Univ.) | *El Dorado, O.* . . | Paige Hall, 27. |
| Dickerson, Jesse Clifford . | *Detroit, Mich.* . . | Paige Hall, 34. |
| Eddy, Frank Fay . . . . | *Charlotte, Mich.* . | Paige Hall, 25. |
| Ferguson, Frank Alvah, A. B. (Bost. Univ.) . . | *Somerville* . . . | 316 Beacon St. |
| Fischer, Theodore Adolph . | *Meriden, Conn.* . | Paige Hall, 20. |

| | | |
|---|---|---|
| Taylor, Henry Butterfield . | *Buffalo, N. Y.* . . | Paige Hall, 36. |
| Ward, Charles Merrill . . | *Brattleboro, Vt.* . | Paige Hall, 3. |
| Wilson, John Harner . . . | *Philadelphia, Pa.* . | Paige Hall, 5. |

### Sub-Junior Class.

| | | |
|---|---|---|
| Bartlett, Alden Eugene . . | *Newtonville* . . | Paige Hall, 15. |
| Bissell, Flint Mandrin . . | *Wellesley* . . . | Paige Hall, 23. |
| Earle, Augusta Gertrude . | *Somerville* . . . | 8 Franklin St. |
| Eills, John . . . . . | *Lowell* . . . . | Paige Hall, 4. |
| Fortier, George Ferdinand . | *Somerville* . . . | Paige Hall, 2. |
| Jones, Clifford Ernest . . | *Cleveland, O.* . . | Paige Hall, 10. |
| Leavitt, Fenwick Lasselle . | *Auburn, Me.* . . | Paige Hall, 22. |
| Macduff, Isabella Stirling . | *Claremont, N. H.*, | 114 Curtis St. |
| Powers, Mariette . . . . | *Newry, Me.* . . . | 114 Curtis St. |
| Robbins, Clarence Guy . . | *Melrose* . . . . | Paige Hall, 9. |
| Thompson, George Linnæus, | *Stafford, Conn.* . | Paige Hall, 28. |

### Special Students.

| | | |
|---|---|---|
| Blackford, Alfred Newton . | *El Dorado, O.* . . | Paige Hall, 16. |
| Kenyon, John Humphrey Plummer . . . . . | *Hope, Me.* . . . | 156 Boston Ave. |
| MacCoy, Mabel Lilla . . . | *New York, N. Y.* . | 31 George St. |

### SUMMARY.

| | |
|---|---|
| Senior Class . . . . . | 11 |
| Middle Class . . . . . | 7 |
| Junior Class . . . . . | 8 |
| Sub-Junior Class . . . . . | 11 |
| Special Students . . . . . | 3 |
| | 40 |

# Admission to the Theological Course.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to the Junior Class without examination. Candidates for the Four-Years Course are examined in some of the Greek classics or in the Greek of the Gospels, and in the English studies usually pursued in high schools.

Applicants may be admitted to the School for any period of not less than one year. Those applying for admission to advanced standing are examined in the studies which have been pursued by the class they propose to enter.

It is earnestly recommended that all who are contemplating a course of theology should take, as preliminary, a full collegiate course of study. The call is for men of liberal culture, and academic discipline is of great value as a preparation for professional studies. It has not been thought expedient, however, to make such a requirement, for it has been found that earnest and capable men aspire to the Christian ministry whose circumstances forbid so extensive preparation. To meet the wants of such, and yet provide for thorough and comprehensive development, a four-years course has been instituted.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week for the first term.* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week for the second term.* PROFESSOR TOUSEY.

**Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes. *Three hours a week for one third of the year.* PROFESSOR LEONARD.

**Old Testament.** — Hebrew History. *Four hours a week.* — Hebrew Language (optional). *Two hours a week.* DR. CURTIS.

**Oratory.** — Practical Exercises in the reading of Scripture and Hymns. *Two hours a week for the second term.* PROFESSOR MAULSBY.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week for the first term.* PROFESSOR TOUSEY.

**Old Testament.** — Old Testament Theology. *Two hours a week.* — *Advanced Hebrew Language Studies (optional). *Two hours a week.* DR. CURTIS.

**New Testament.** — Hermeneutics; Criticism; Exegesis of Matthew's Gospel, with parallel and supplemental passages from the other Synoptics; The Life of Christ; Theology of the Synoptic Gospels. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week.* PROFESSOR KNIGHT.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Two hours a week for two thirds of the year.* PROFESSOR LEONARD.

**Oratory.** — Practice in the reading of Scripture, Hymns, and Sermon-literature. *Two hours a week for the first term.* PROFESSOR MAULSBY.

* Omitted this year.

## MIDDLE CLASS.

**Old Testament.** —* Old Testament Sociology. *Two hours a week.*
DR. CURTIS.

**New Testament.** — Criticism and Exegesis of the Fourth Gospel; Johannine Theology. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics. *Three hours a week for the year.* PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week for the first term, and three for the second term.*
PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.*
PROFESSOR LEONARD.

## SENIOR CLASS.

**New Testament.** — Criticism and Exegesis of Selected Passages from Romans, 1 Corinthians, and Hebrews; Pauline Theology. *Two hours a week for two thirds of the year.*
PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week for the first third of the year.* PROFESSOR KNIGHT.

**Philosophy of Theism.** — Theistic Arguments; Special Studies with reference to the Evidences of Final Causes in Nature; Science and Religion. *Three hours a week.* PROFESSOR TOUSEY.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week.*
PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*
PROFESSOR LEONARD.

**Pastoral Care.** — Personal Qualifications and Duties of the Pastor; the Administration of Religion in General; Organized Work in the Parish. *Three hours a week for the second term.*
PROFESSOR LEONARD.

*Omitted this year.

# Departments of Instruction.

**Psychology.** — The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and, while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**Rhetoric.** — The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the chapters which deal with the art of constructing discourse, and

with the methods of applying the principles of rhetoric in actual literary work.

**Old Testament. — I. Hebrew**: The aim is a working knowledge of the language of the Old Testament. The first part of the year is devoted to the grammar and the vocabulary of the more common words, with the reading of easy prose. The method is inductive. The second part of the year is occupied with exegetical and critical readings from the Pentateuch, with especial reference to modern theories.

The text-books are Davidson's or Bissell's Hebrew Grammar, the Hebrew Bible, and Driver's Introduction, with references to Kuenen's Hexateuch, Addis's Hexateuch, and Bacon's Genesis of Genesis.

**II. Advanced Hebrew**: This is a continuation of course I. Selections from ancient, middle, and late Hebrew are read, and the various critical questions are examined from the point of view of the changed vocabulary and syntax, and from the growth of ethical and religious insight.

The courses in the Hebrew language are elective, and aim to supplement the work of the other courses, being at once more technical and more thorough, and leading naturally to independent study and research.

**III. Hebrew History**: The revised version of the Old Testament is the text-book, and the aim is to impart a knowledge of Israelitish history from its beginning to its close. Each reading is followed by a lecture on the part read in explanation and elucidation of the text. So far as possible books and parts of books are read in chronological order, and especial attention is paid to the recent Assyrian and Babylonian discoveries.

The reference books are Stanley's, Renan's, Toy's, and Wellhausen's Histories, and the Bible for Learners.

**IV. Old Testament Theology**: The aim is to systematize and emphasize the salient and permanent elements in Old Testament Religion. The text-books are Piepenbring's The-

ology of the Old Testament and Genung's Epic of the Inner Life (Job).

References are given to Schultz's Old Testament Theology, Toy's Judaism and Christianity, and Kuenen's Religion of Israel, and to Davidson's and Dillman's commentaries on Job.

The work is further supplemented with lectures during a portion of the hour on the canon and text, and on disputed points as to the date and meaning of some of the more difficult books.

**V. Old Testament Sociology**: The aim is to give by means of lectures a history of the social development of man as illustrated in Hebrew History. The method is historical and exegetical, while yet it seeks to do justice to the expressed ideals of the most spiritual. The main divisions are, Social Beginnings, The Family, The State, Economics, and The Influence upon these of the Biblical Religion and Morality.

Readings are assigned in the various histories and theologies of the Old Testament, and in the commentaries. Special study is also made of the various civil codes, and of one or more of the other books that are germane to the subject.

**New Testament.** — The origin, contents, and history of the New Testament writings are first considered, together with the history of the canon during the first two centuries, and the historical and archæological problems involved; the aim being to make the student intelligent as to the leading questions in New Testament criticism, and to form in him the habit of critical judgment. The method pursued is to deal with these questions as they naturally arise in the exegesis. Topics are assigned, and references given to the leading authorities, by means of which the student is enabled to compare and contrast differing opinions, and arrive at his own conclusions. This work is supplemented with notes from the professor, and written examinations are held at convenient intervals.

The exegetical study of the class includes the life of Christ from the Synoptic Gospels, the teaching of the Fourth Gospel, and selected passages from Romans and First Corinthians.

The principles of interpretation are given to the class in notes, and the students are required to apply them to the passages read, to discover the main points to be interpreted, without recourse to commentaries, and to deal with these principal points in accordance with approved exegetical methods. Later in the course the class is taught the right use of commentaries.

The course also includes a study of New Testament Theology which covers the doctrines of Christ contained in the Synoptic Gospels, the Johannine theology, and the doctrinal system of Paul. The aim is to discover the main lines of thought stated and directly involved, and their relations to each other. The results of the study appear in the interpretation of the New Testament writings as they are read by the class.

Reference is made to the following authorities: Schürer, Westcott, Weiss, Reuss, Edersheim, Ewald, Davidson, Abbott, Lardner, Fisher, Keim, De Wette, Meyer, Lange, Olshausen, Alford, Godet, Ellicott, Luthardt, Delitzsch, and Schmid.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. Also he is constantly instructed and inspired by the story of the great and good who have made the Church what it is. And in general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its Relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief

religious sects in the United States; and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog, and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.** — The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and

Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Laou-tsze, Zoroaster, and Mohammed.

The topics noted are: The Deity; the Forms and Meaning of Worship; the Condition of the People, industrial, intellectual, and moral; and the Power of each Religion for the Elevation of the Human Race.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.** — Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.** — The various modes of the theistic argument are reviewed, their grounds scrutinized, and their logical value carefully discussed. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures, and parallel

readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science, and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.** — The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the sources of theological material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions, — the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional sub-divisions will be noted historically, but will be accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems, — ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to

the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in homiletics covers two thirds of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Helps in Sermon-Preparation, Modes of Development, Style in Spoken Discourse, the Invention and Arrangement of Material, Illustrations and Use of Anecdote, Personality in Preaching, Character and Preaching.

**Pastoral Theology.** — Historic basis is found for this particular study in the Apostolic Church, — its organization, polity, and methods of work, — and in the instituted life of modern churches, Prelatical, Presbyterian, Congregational; and results reached are considered with reference to the government and methods of the Universalist Church.

The course further provides for the discussion of the spiritual, mental, and social qualifications of the pastor; the study of the forms and conduct of public worship; the practical illustration of pastoral oversight and visitation, the methods of building and uniting a parish, and the theories of

church-work in Sunday-schools, missions, charities; the study of modern social and industrial problems; and lectures upon the official duties of the Christian minister.

From year to year the course in Pastoral Theology is supplemented with special lectures from clergymen who are engaged in the active work of the ministry.

**Oratory.** — The object of the instruction in the department of Oratory is to gain a natural as well as reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the class exercises consist of actual practice in reading selected hymns and portions of the Scriptures, with the preaching, in the advanced division, of parts of sermons. The work done is followed by criticism and suggestion from the instructor and the class. A special class offers opportunity for practice in extemporaneous speaking.

# General Information.

### RELIGIOUS EXERCISES.

Devotional services, conducted by the Professors and the Students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

### EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

### LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

### ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty.

### GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the stu-

dent in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

### GYMNASTICS.

At least two years' work in the Gymnasium is ordinarily required of all students. Provision is made for continuing such work according to individual needs.

### COURSES OF STUDY AND DEGREES.

THE FULL COURSE for Bachelors of Arts occupies three years; for all others, four years. A special course of one, two, or three years may be taken.

THE DEGREE OF BACHELOR OF DIVINITY is conferred upon college graduates who pass satisfactorily an examination in the studies of the Three-Years Course, and upon others who complete the Four-Years Course with distinction.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

### BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture-rooms, and a special room for the meetings of the Faculty.

Paige Hall, containing thirty-six rooms, affords a separate apartment for each student.

Until other buildings are provided, two of the rooms in Miner Theological Hall will be used for the Historical and the Reference Libraries, and for the religious services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

## EXPENSES.

The rooms in Paige Hall are neatly and amply furnished, heated by steam, and lighted by gas. The only necessary articles to be provided by the student are sheets, pillow-cases, blankets, and towels.

The necessary school expenses, including board, washing, light, steam-heat, care of room, and gymnasium charges do not exceed two hundred and twenty-five dollars a year.

Beginning with the school year 1894–95, each student who enters the school will be required to deposit with the Treasurer of the College either a bond with two satisfactory sureties for the amount of fifty dollars, or the sum of twenty-five dollars in cash, which sum shall bear interest at the rate of four per cent yearly, and shall be returned when the student leaves the Divinity School, his term bills first being paid in full.

The General Convention of Universalists aids students by a system of loans; and those in the regular course who have shown sufficient maturity are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## SCHOLARSHIPS, ETC.

The Greenwood Scholarship. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

Rev. W. S. Perkins, D. D., of Meriden, Conn., provides for an annual prize of twenty-five dollars to encourage extemporaneous preaching.

The Dockstader Scholarships. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by Rev. John Vannevar, is used in the purchase of books for the Department of Homiletics.

# MEDICAL SCHOOL.

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., PRESIDENT.

ALBERT NOTT, M. D., DEAN.
*Professor of Physiology.*

CHARLES P. THAYER, M. D., SECRETARY.
*Professor of General Descriptive and Surgical Anatomy.*

HENRY W. DUDLEY, M. D.
*Professor of Pathology.*

WILLIAM R. CHIPMAN, A. B., M. D.
*Professor of the Principles and Practice of Surgery and Operative Surgery.*

WALTER L. HALL, M. D.
*Professor of the Principles and Practice of Medicine and Clinical Medicine.*

JOHN W. JOHNSON, M. D., TREASURER.
*Professor of Obstetrics and Gynæcology.*

FRANK G. WHEATLEY, A. M., M. D.
*Professor of Materia Medica and Therapeutics.*

## OTHER INSTRUCTORS.

ARTHUR E. AUSTIN, A. B., M. D.
*Lecturer on Medical Chemistry.*

CHARLES A. PITKIN, A. M., PH. D.
*Lecturer on General Chemistry.*

JOHN A. TENNEY, M. D.
*Lecturer on Ophthalmology and Otology*

SAMUEL G. WEBBER, A. B., M. D.
*Lecturer on Neurology.*

GEORGE F. EAMES, M. D., D. M. D.
*Lecturer on Laryngology.*

THOMAS M. DURELL, M. D.
*Lecturer on Medical Jurisprudence.*

J. CUSHING GALLISON, M. D.
*Lecturer on Genito-Urinary Surgery.*

J. STERLING KINGSLEY, S. D.
*Lecturer on Histology.*

WILLIAM R. WOODBURY, A. B., M. D.
*Lecturer on Hygiene.*

CHARLES D. KNOWLTON, M. D.
*Demonstrator of Anatomy.*

RICHARD M. PEARCE.
*Demonstrator of Physiology.*

FRED S. RADDIN, M. D.
*Assistant in Surgery.*

WILLIAM A. WHITE, M. D.
*Lecturer on Diseases of Children.*
*Assistant in Theory and Practice of Medicine.*

EDWARD E. THORPE, M. D.
*Assistant in Medical Chemistry.*

CHARLES L. CUTLER, M. D.
*Assistant in Gynæcology.*

FRANK B. BROWN, M. D.
*Assistant in Pathology.*

ALBERT E. ROGERS, M. D.
*Assistant in Materia Medica.*

# Students.

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|---|---|
| Allen, Chandler Briggs | *Wellesley Hills.* |
| Anderson, Mabelle | *Haverhill.* |
| Avedisian, Avedis der | *Boston.* |
| Ayers, Seabury Rogers | *Boston.* |
| Bailey, William Howard | *Waltham.* |
| Barry, James Henry | *Charlestown.* |
| Blake, LeGrand | *Boston.* |
| Bonyman, Harry Evan | *Everett.* |
| Bourn, Cora Etta | *Providence, R. I.* |
| Bowker, Jane Howorth | *Brookline.* |
| Briggs, Lloyd Vernon | *Hanover.* |
| Brightman, Helen | *Acushnet.* |
| Butterworth, Mary Frances | *Revere.* |
| Cameron, Charles Robert | *Everett.* |
| Chadbourne, May | *Medford.* |
| Chaffee, Harry Smith | *Rochester, Vt.* |
| Chandler, Frederick Emerson | *Dorchester.* |
| Clark, James Colby Dorr | *Medford.* |
| Coffin, Harold Leroy | *Addison, Me.* |
| Cummings, William Sinnott | *West Stoughton.* |
| Davis, Stephen Rich | *Barre, Vt.* |
| Dean, Rosa, B. A. | *Medford.* |
| Dennis, Jane Louise | *Fall River.* |
| Dunham, Henry Bristol, Ph. G. | *Watertown.* |
| Duval, Ida May | *Boston.* |
| Ebann, Charles Deletang | *Green Harbor.* |
| Faxon, Eudora Mead, M. D. | *Boston.* |
| Fleet, William Ernest, M. D. | *Cambridge.* |
| Fletcher, Rosa, M. D. | *Boston.* |
| Flynn, William Andrew | *Rockland.* |
| French, James Innes | *Woburn.* |
| Gage, George Asahel | *Boston.* |
| Gallison, Ambrose John, M. D. | *Franklin.* |
| Gallison, Jeff Cushing, M. D. | *Boston.* |
| Greene, Thomas Francis | *Roxbury.* |
| Greene, William Henry | *Roxbury.* |
| Grovestein, William Pride | *Cambridge.* |

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|---|---|
| Holmes, Harry Clinton | *Chelsea.* |
| Hughes, Laura Ann Cleophas | *Boston.* |
| Hunt, George Eddy | *E. Constable, N. Y.* |
| Johnson, Henry Peyton | *Brookline.* |
| Johnstone, William Joseph | *Boston.* |
| Kelleher, Patrick Francis | *Cambridge.* |
| Kinney, Eunice Draper, M. D. | *Boston.* |
| Knowlton, Charles Davison, M. D. | *Boston.* |
| Leavitt, Edward Alden | *Auburn, Me.* |
| Leavitt, George Albert | *Boston.* |
| Mahoney, Frank Augustus | *South Boston.* |
| Mann, Gordon | *Rockland.* |
| McNamara, Eugene Thomas | *Camden, Me.* |
| Meigs, Jonathan Harding | *Beachmont.* |
| Moir, Archibald Campbell Milton | *Cambridge.* |
| Morse, Frederick Otis | *Charlestown.* |
| Palmer, Alice Elizabeth | *Batavia, N. Y.* |
| Patch, Annie S. Kenney | *Farmington, N. H.* |
| Patrick, Thomas William | *Trinidad, West Indies.* |
| Patterson, William Francis | *E. Somerville.* |
| Pearce, Richard Mills | *Boston.* |
| Pillsbury, Ernest Dean | *Somerville.* |
| Plumer, Luther Boutelle, B. D. | *Somerville.* |
| Pond, Eleanor Dorcas, A. B. | *Medway.* |
| Putnam, Charles Willis | *Peabody.* |
| Rabinovich, Helen | *New York City, N. Y.* |
| Reed, Asa Pingree | *South Bridgton, Me.* |
| Rice, Walter Henry | *Waltham.* |
| Robinson, Fred Hilliard | *Manchester, N. H.* |
| Roy, James McDonald, M. D. | *Somerville.* |
| Ryan, John Francis | *Brookline.* |
| Scoboria, Peter Gilmore | *Chelmsford.* |
| Smith, Annie Manson, B. S. | *Bedford.* |
| Smith, Mary Euphrasia | *Valley Falls, R. I.* |
| Steele, Howard Russell | *Northampton.* |
| Stevens, Sarah Elmina | *Roxbury.* |
| Stone, Ella Gertrude | *Lawrence.* |
| Thorpe, Edward Eliphalet, M. D. | *Newton Centre.* |
| Walker, William | *Roxbury.* |
| Whipple, Albert Lawrence | *Hamilton.* |
| White, William Allen, M. D. | *Boston.* |
| Wright, Jennie Mary | *New Haven, Conn.* |
| Wylie, Ella Rosalind | *Boston.* |

# The Medical School.

After mature deliberation the Trustees decided to enlarge the departments of the college by the establishment of a medical school. This action was not taken until late in the month of August. Notwithstanding this fact, the number of students presenting themselves for enrolment at the opening of the term is evidence of the need of such a school; namely, a school of the regular order, in which the charges are moderate, at an educational centre, like Boston, where the clinical advantages are superior to those of most New England medical schools, and where no distinction is made on account of sex.

Owing to the financial depression, the step was taken not without misgiving. But the results already attained seem to justify the movement. In the brief time at the disposal of the authorities it was impossible to obtain quarters for the school that were altogether satisfactory. But measures will be taken at once to improve the facilities. The hearty endorsement the undertaking has received from leading members of the medical profession in this part of the country is very encouraging. The public can rest assured that no pains will be spared to equip the school so that the instruction shall be thorough, complete, and practical. As soon as new arrangements are made notice will be given by an announcement. It is expected that the announcement will be ready during the month of May, 1894. It will be forwarded on application to the Secretary of the Medical Faculty.

# Course of Study.

This consists of a three-years graded course of didactic and clinical lectures and recitations upon the different subjects of medical science, illustrated by charts, plates, drawings, and dissections. These will be supplemented by individual work in the laboratories and dissecting-room, thus requiring the student to become familiar with the various phenomena met with in practice.

## FRESHMAN CLASS.

**Anatomy.** — Lectures and demonstrations with the cadaver. Gray is used as a text-book, with references to Quain, Holden, Darling, and Ranney. *Three hours a week.* PROFESSOR THAYER.

**Physiology.** — Including Hygiene. Lectures, with the use of such texts as Landois and Sterling, Human Body, Martin (fifth edition), Dalton, Flint, and Kirk's Handbook (twelfth edition). *Two hours a week.* PROFESSOR NOTT, DR. WOODBURY.

**Histology.** — This subject is given by lectures with demonstrations, making free use of the microscope. *One hour a week.* PROFESSOR KINGSLEY.

**General Chemistry.** — The text-books used are Witthaus's (third edition), Hill's Qualitative Analysis, Cook's, the new Chemistry. Lectures are given by the instructor, and students are required to supplement the instruction by laboratory practice. *Three hours a week.* DR. PITKIN.

## MIDDLE CLASS.

**Pathology.** — The subject treated by lectures, with illustrations and references to such texts as Greene, Billroth, and Zeigler. *Three hours a week.* PROFESSOR DUDLEY, DR. GALLISON.

**Materia Medica and Therapeutics.** — Didactic lectures and recitations, with practice in writing prescriptions. The texts used are Hare, Wood, Bartholow, Mann's Prescription Writing, and United States Dispensary. *Two hours a week.* PROFESSOR WHEATLEY.

**Medical Chemistry.** — Toxicology; Detection of Poisons; Analysis of Urine. Lectures and laboratory. *Two hours a week.* DR. AUSTIN.

## SENIOR CLASS.

**Obstetrics.** — Lectures with illustrations, by plates and manikins. Text-books, Lusk, Playfair, Cazeaux, and Winckle. *Three hours a week for the first term.* PROFESSOR JOHNSON.

**Gynæcology.** — Lectures and recitations, with frequent demonstrations by operations. The texts followed are Thomas, Emmet, and Munde. *Three hours a week for the second term.* PROFESSOR JOHNSON.

**Surgery.** — Lectures and illustrations with the cadaver of the principal surgical operations. Students are referred to such writers as Bryant, Treeves, Ashurst, and Wyeth. *Two hours a week.* PROFESSOR CHIPMAN.

**Theory and Practice of Medicine.** — Lectures. *Two hours a week for the first term, and one lecture and one clinic each week for the second term.* PROFESSOR HALL.

**Ophthalmology and Otology.** — Students are required to attend practical instruction in diseases of the eye and ear. *One hour a week.* DR. TENNEY.

**Medical Jurisprudence.** — The subject of jurisprudence, so far as it has interest for the medical practitioner, is fully covered. *Lectures one hour a week for the first term.* DR. DURELL.

**Neurology.** — The subject is given by lectures, with opportunities for clinical study. *One hour a week for the second term.* DR. WEBBER.

**Laryngology.** — Students are required to attend practical instruction in diseases of the nose and throat. Lectures and clinics. *One hour a week for the first term.* DR. EAMES.

**Genito-Urinary Surgery.** — Lectures, with operations and demonstrations. *One hour a week.* DR. GALLISON.

# Departments of Instruction.

**Anatomy.** — The course in Anatomy consists of lectures and demonstrations illustrated by plates, models, and dissections. Especial attention is devoted to Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations emphasized and explained. In the dissecting-room the student is required to carry on his work with neatness and precision, under the supervision of the demonstrator, thus acquiring that familiarity with the use of instruments which is so essential to the practitioner.

The new dissecting-room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of Dr. Knowlton, Demonstrator of Anatomy, who will assign the parts to students and give all necessary directions and advice. During the lectures upon Osteology students will be allowed to take specimens of bones for study at their homes.

**Physiology.** — This branch is taught by means of didactic lectures, frequent quizzing, and, so far as practicable, demonstrations upon the lower animals. Cellular Physiology, holding as it does a high and important position, will be taught in its modern acceptation.

Physiology being naturally divided into several departments will be considered in its relations to Anatomy, Chemistry, Histology, and Pathology. Especial attention will be given to the nervous system, digestion, absorption, secretion, the blood and its circulation. The student can thus study the phenomena which the human body exhibits in every department of its vital operations.

**General Chemistry.** — This course consists of Descriptive Chemistry and Qualitative Analysis, and so much of Theoreti-

cal Chemistry as is necessary for a proper understanding of the subject. The instruction is by lectures, recitations, and practical work at individual desks in the laboratory by the students. The aim is to impart such general knowledge of the subject as is necessary to the intelligent physician. At the same time any who may wish to pursue the study further than is required of every graduate may do so by special arrangement.

**Medical Chemistry.** — Recognizing fully the steadily increasing importance attached to urinary analysis as a means of diagnosis in disease, increased facilities will this year be offered for practical work. Pathological urine for analysis is procured daily from one of the large hospitals of Boston, and each student is required to examine a certain number of specimens and present a written report of analysis of same, including the probable diagnosis. In addition, a short course will be given on the practical examination of poisons.

**Pathology.** — Instruction in this department will consist of lectures, quizzes, and recitations. It will be the aim to impress upon the student the importance of a thorough knowledge of the cause, career, and termination of pathological processes, giving frequent illustrations by morbid specimens.

Bacteriology will occupy an important place in the course, and will receive the attention its increasing developments and interest demand.

**Materia Medica and Therapeutics.** — The instruction in this department will consist of didactic lectures and recitations. Special attention will be given to the physiological action and therapeutical use of drugs, combined with practical exercise in the construction and writing of prescriptions. Recent additions to the Materia Medica will be shown and their action described. Instruction will be given in the metric system of weights and measures.

**Surgery.** — Two lectures will be given each week, and the principal surgical operations will be performed and carefully demonstrated upon the cadaver before the class. Special courses

will be given in genito-urinary, orthopædic and regional surgery. Minor surgery, bandaging, application of splints and surgical dressings will be carefully and thoroughly taught.

**Theory and Practice and Clinical Medicine.** — There will be two lectures given each week during the first half of the year, and one lecture and one medical clinic weekly during the last half. Two recitations will be held each week during the whole year. Preventive medicine and hygiene, from their rapidly increasing importance in the practical work of the physician, will be thoroughly considered.

**Obstetrics and Gynæcology.** — Under this head the instruction in Obstetrics will consist of lectures illustrated by plates and manikins, with recitations, three times a week. Especial stress is put upon diagnosis, the mechanism of labor, and care during convalescence. So far as possible, the various operations will be demonstrated upon the cadaver. Cases of Obstetrics are furnished students when possible.

In Gynæcology the instruction will consist of lectures and recitations during the second half of the term, with a demonstration of as many of the operations as may be feasible.

**Special Instruction.** — In addition to the subjects of instruction already mentioned there will be given during the course lectures, both didactic and clinical, upon special subjects of importance to the practitioner. These lectures are of great interest, especially in connection with the college dispensary, from which a large amount of clinical material is obtained.

**Ophthalmology and Otology.** — It is the aim of this course to prepare the student to treat such cases of disease of the eye and ear as he will be likely to meet in general practice. The lectures will be fully illustrated by drawings and apparatus, and especial attention will be paid to teaching the student how to best examine the organs and become familiar with the ophthalmoscope and otoscope. The college dispensary will be used and students will be able to see a greater variety of diseases of the eye and ear than they will be likely to meet with in general practice.

**Diseases of Children.** — This course will consist of a thorough instruction in the many diseases incident to childhood, with special stress upon their early diagnosis. The various eruptive diseases will be considered, illustrated either by plates or cases occurring in dispensary work.

**Clinical Advantages.** — The facilities offered by this College for clinical observations and study are continually increasing. Besides the dispensary directly under the control of the Faculty, it is contemplated, at no distant day, to open an additional one in the college building. Besides these the great hospitals of Boston afford ample opportunity for witnessing important surgical operations.

## EXAMINATIONS.

Examinations are both oral and written. The oral take place each week of the session; the written are held at the close of the session in the college building, and are as follows: —

*First Year:* Anatomy, including Histology, Physiology, including Hygiene, General Chemistry.

*Second Year:* Materia Medica and Therapeutics, Medical Chemistry and Toxicology and Pathology.

*Third Year:* Surgery, including the Eye and Ear, Practice, including Diseases of Children, Obstetrics, including Gynæcology.

# Requirements.

## FOR ADMISSION.

All students will have to pass an entrance examination consisting of —

(1) A composition written in English, of not less than two hundred words.

(2) The translation of easy Latin prose, or showing a satisfactory knowledge of the derivation of medical terms, and medical and pharmaceutical terminology.

(3) An examination in higher Arithmetic.

(4) An examination in elementary Physics, including Heat, Light, and Electricity.

Students who may fail in any of these examinations may be enrolled as conditioned, and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

EXCEPTIONS: Such entrance examinations will not be required of students who have matriculated in a regular medical school requiring a similar examination; nor of students who have passed the entrance examination required by the Regents of the State of New York, or similar constituted authority in other States; nor of students, matriculates, or graduates of reputable colleges of Literature, Science, and the Arts, or graduates of high schools of the first grade, or of State normal schools.

## FOR GRADUATION.

Candidates must be twenty-one years of age, of good moral character.

They must have attended three full courses of medical lectures of not less than six months' duration each, the last at this College, no two courses to have been taken in the same year.

They must present evidence of having dissected under the direction of a Demonstrator of Anatomy.

They must satisfactorily pass all the required examinations.

These requirements are substantially like those established by the American Association of Medical Colleges of the United States, and do not apply to students who matriculated prior to July 1, 1892. They will be strictly enforced at this institution.

# General Information.

## SESSIONS OF THE SCHOOL.

The annual course of lectures commences on the first Wednesday in October of each year, and continues until the first Wednesday in May.

The Christmas vacation (of a week) divides the course into two sessions.

There are no exercises at the school during this vacation, nor upon Thanksgiving Day, or Fast Day.

The course for 1894–95 will commence on Wednesday, Oct. 3, 1894, and continue until Wednesday, May 1, 1895.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of each session.

Persons who have studied medicine with a regular physician one or more years, or attended one full course of lectures at a recognized medical college, or students who have taken two full courses of lectures at any recognized medical college, may be admitted to the second or third year's course.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of his period of connection with the school.

## EXPENSES.

### First Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 90.00 |

**Second Year.**

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 90.00 |

**Third Year.**

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 90.00 |
| Graduation fee | 30.00 |

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| | |
|---|---|
| Ticket admitting to the three years' lectures (when paid in advance) | $250.00 |
| Instruction in a single branch | 40.00 |
| Fee for graduate instruction | 50.00 |
| Dissecting material | At cost. |

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent and reasonable boarding places.

Students arriving in the city are invited to call upon the Secretary, at his office, No. 74 Boylston Street, where they will be given all necessary advice about boarding-places, and any assistance in the Secretary's power will be rendered.

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Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, PROFESSOR CHARLES P. THAYER, M. D., *74 Boylston Street, Boston, Mass.*

# BROMFIELD-PEARSON SCHOOL.

(TECHNICAL.)

# Bromfield-Pearson School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

GARDNER C. ANTHONY, A. M., DEAN,
*And Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.
*Instructor in Drawing.*

WILLIAM H. DETWYLER, PH. B.
*Tutor in French.*

GEORGE H. FURBISH.
*Teacher of Woodwork and Foundry Work.*

FRANK G. WREN.
*Tutor in Mathematics.*

_____ _____,
*Teacher of Forging.*

## STUDENTS.

| | |
|---|---|
| Battey, Benjamin A. | *Providence, R. I.* |
| Fletcher, David Thurston | *Whitinsville, Mass.* |
| Kimball, Frederick E. | *Providence, R. I.* |
| Larkin, Frank Provost | *Westerly, R. I.* |
| Massie, Walter W. | *Providence, R. I.* |
| Merritt, Henry D. | *North Attleboro, Mass.* |
| Norris, Charles Henry | *New Britain, Conn.* |
| Richardson, Ernest Stanley | *Danvers, Mass.* |
| Savage, J. Arthur | *West Somerville, Mass.* |
| Smith, Edwin Newton | *West Somerville, Mass.* |
| Sweet, Morton Sumner | *North Uxbridge, Mass.* |
| Ward, George Allen | *Barre, Vt.* |
| Weatherwax, Bion W. | *Aberdeen, Washington.* |
| Williams, Walter E. | *Edgewood, R. I.* |

# Courses of Study.

Two courses are open to students of this school: a preparatory course of one year for such as may be qualified by previous education and maturity of mind to fit for either of the Engineering Courses of Tufts College in one year; and a special course in Engineering for those who may devote but two years to their studies, and desire a scientific course which, though very brief, shall be thorough and complete in itself.

## THE PREPARATORY COURSE.

### First Quarter.

Academic Algebra. *Six hours a week.*
French. *Five hours a week.*
English. *Two hours a week.*
Freehand Drawing. *One hour a week.*
Mechanical Drawing. *Elective.*

### Second Quarter.

Academic Algebra. *There hours a week.*
Plane Geometry. *Three hours a week.*
French. *Five hours a week.*
English. *Two hours a week.*
Freehand Drawing. *One hour a week.*
Mechanical Drawing. *Elective.*

### Third Quarter.

Academic Algebra. *Three hours a week.*
Plane Geometry. *Three hours a week.*
French. *Five hours a week.*
English. *Two hours a week.*
Mechanical Drawing. *Three hours a week.*

### Fourth Quarter.

Solid Geometry. *Four hours a week.*
Arithmetic. *Two hours a week.*
French. *Five hours a week.*
English. *Two hours a week.*
Mechanical Drawing or Trigonometry. *Three hours a week.*

## SPECIAL ENGINEERING COURSE.

This course is designed to provide a special training in Mathematics, Mechanics, and Drawing for those whose time may be limited to two years, and whose previous education is insufficient to enable them to enter the College. It is especially intended for those who, having a full appreciation of the necessity for such an education, may devote all of the allotted time to faithful service in study and investigation. Much of the work being individual, the student is free to pursue his studies as rapidly as his own ability may permit. It is not the object of the school to produce expert engineers or skilled draughtsmen, but to give such direction to the thought and afford such training in theory and practice as is requisite to every successful engineer.

### FIRST YEAR.

#### First Quarter.

Academic Algebra. *Six hours a week.*
Freehand Drawing. *One hour a week.*
Mechanical Drawing. *Eight hours a week.*
French and English. *Elective.*

#### Second Quarter.

Academic Algebra. *Three hours a week.*
Plane Geometry. *Three hours a week.*
Freehand Drawing. *One hour a week.*
Mechanical Drawing. *Eight hours a week.*
French and English. *Elective.*

#### Third Quarter.

Academic Algebra. *Three hours a week.*
Plane Geometry. *Three hours a week.*
Mechanics. *Two hours a week.*
Drawing of Gears, Cams, etc. *Eight hours a week.*
French and English. *Elective.*

#### Fourth Quarter.

Solid Geometry. *Four hours a week.*
Trigonometry. *Three hours a week.*
Mechanics. *Two hours a week.*
Machine Drawing. *Eight hours a week.*
French and English. *Elective.*

## SECOND YEAR.

### First Quarter.

Advanced Algebra, Spherical Geometry. *Six hours a week.*
Descriptive Geometry. *Three hours a week.*
Machine Drawing. *Six hours a week.*
Shop Work. *Elective.*

### Second Quarter.

Advanced Algebra. *Three hours a week.*
Analytic Geometry. *Three hours a week.*
Applied Mechanics. *Three hours a week.*
Machine Design. *Six hours a week.*
Shop Work. *Elective.*

### Third Quarter.

Analytic Geometry, Differential Calculus. *Three hours a week.*
Applied Mechanics. *Three hours a week.*
Steam Engine. *Four hours a week.*
Boiler and Steam Engine Detail Drawing. *Six hours a week.*
Shop Work. *Elective.*

### Fourth Quarter.

Differential and Integral Calculus. *Four hours a week.*
Steam Engine. *Four hours a week.*
Design for Special Machine. *Eight hours a week.*

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from school previously attended, or by examination, oral or written, as may be deemed necessary.

In this matter of examination, either for entrance or for advanced standing, the students are considered individually, rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## CERTIFICATES.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state what subjects have been completed according to the requirements of the institution. No diploma is given or degree conferred.

## TUITION.

Tuition is $30 per quarter, payable in advance, and no part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Full information concerning the courses and other matters pertaining to the school may be obtained on application to GARDNER C. ANTHONY, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

## DEGREES CONFERRED AT THE THIRTY-SEVENTH ANNUAL COMMENCEMENT, JUNE 21, 1893.

### Honorary Degrees.

#### A. M.

CHARLES JEPTHA HILL WOODBURY.

#### D. D.

ARTHUR GUINESS ROGERS, A.M.

### Degrees in Course.

#### A. M.

GEORGE ALLEN ARNOLD, PH.B., 1892.
WILLIAM KENDALL DENISON, A.B., 1891.
FRANKLIN KENT GIFFORD, A. B. (Harvard, 1884), B.D.,1893.
CHARLES HENRY PATTERSON, A.B., 1887.
HENRY BEECHER STONE, PH.B., 1886.
HIRAM AUSTIN TUTTLE, A.B., 1891.

#### C. E.

ALFRED WARREN KENNEDY, A.M.B., 1892.

#### A. B.

HENRIETTA NOBLE BROWN.
WALDO LINCOLN COOK.
JOSEPH BYRON GROCE.
WILLARD SHEPARD MARTIN.
HARRIS WALDEMAR SPAULDING.
ALFRED PERCIVAL THOMPSON.
FREDERICK CUSHMAN WATSON.

#### Ph. B.

LOUIS WALES ARNOLD.
ARTHUR WINFIELD DEGOOSH.

#### B. C. E.

CHARLES RICE GOW.
HENRY ALLEN PEAKES.
GEORGE EDWARD STRONG.

B. E. E.

GEORGE MOULTON BATES.
HARRY GRAY CHASE.
CLINTON EMERSON DOLBEAR.
JOHN ALDEN NEAL.
HARRY ORMAN ROBINSON.
WILFRED WESLEY RUSS.
STILLMAN SHAW.
HOWARD HANCHETT WESTON.

B. D.

FRANKLIN KENT GIFFORD.
HOWARD ANTHONY MARKLEY.
HARLEY DAVIDSON MAXWELL.

## HONORS AWARDED AT THE THIRTY-SEVENTH ANNUAL COMMENCEMENT.

**Modern Languages.**

LOUIS WALES ARNOLD.

**Second Year Honors in Greek.**

HARRY CHARLES FOLSOM.

## AWARDS OF PRIZES, 1892-93.

**Goddard Prize in Mathematics.**

PERCIVAL GATES BARNARD, of the Freshman Class.

**Greenwood Prize Scholarship in Oratory.**

WILLARD STANTON SMALL, of the Junior Class.

**Rhetorical Prizes.**

THOMAS WHITTEMORE and HERBERT ELMON BENTON, of the Junior Class; WILLIAM ROGER DUNHAM and CHARLES DOW CLARK, of the Sophomore Class.

**Greenwood Prizes in Oratory in the Divinity School.**

FREDERIC WILLIAM PERKINS, ARTHUR WILDER GROSE, and LESLIE MOORE.

**Perkins Prizes for Extemporaneous Preaching in the Divinity School.**

FRANKLIN KENT GIFFORD and LESLIE MOORE.

**Entrance Examination Prize, 1893-94.**

LEM GALE BLANCHARD.

# CATALOGUE

OF

# TUFTS COLLEGE

1894-95

BOSTON:
ALFRED MUDGE & SON, PRINTERS,
No. 24 FRANKLIN STREET.
1895.

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OF

# TUFTS COLLEGE

1894-5

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1895.

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# Calendar.

## 1894.

| | | |
|---|---|---|
| SEPT. | 20. | College year begins, Thursday morning. |
| SEPT. | 23. | Russell Lecture, Sunday, 8 P. M. |
| NOV. | 1. | Limit of time for applying for Scholarships. |
| DEC. | 19. | Christmas recess begins, Wednesday evening. |

## 1895.

| | | |
|---|---|---|
| JAN. | 2. | Christmas recess ends, Wednesday evening. |
| FEB. | 9. | End of first half year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 11. | Second half-year begins, Monday. |
| MARCH | 30. | Spring recess begins, Saturday evening. |
| APRIL | 7. | Spring recess ends, Sunday evening. |
| MAY | 28. | Prize Reading in the College of Letters. |
| JUNE | 4. | Prize Reading in the Divinity School. |
| JUNE | 14. | Class Day, Friday. |
| JUNE | 16. | Baccalaureate Sermon, Sunday, 3 P. M. |
| JUNE | 19. | Thirty-ninth Annual Commencement, Wednesday. |

*First Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| JUNE | 20. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M.<br>Physics, 4 to 5 P. M. |
| JUNE | 21. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M.<br>Chemistry, 4 to 5 P. M. |
| JUNE | 22. | Greek and Intermediate or Advanced German, 9 to 11 A. M.<br>Natural History (two subjects), 11 A. M. to 1 P. M. |

SUMMER VACATION, THIRTEEN WEEKS.

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*Second Examinations for Admission to College of Letters.*

SEPT. 17. Algebra, 9 to 10.30 A. M.
English, 10.30 A. M. to 12.30 P. M.
Arithmetic and Plane Geometry, 2 to 4 P. M.

SEPT. 18. Latin and Advanced Mathematics, 9 to 11 A. M.
Elementary German and French, 11 A. M. to 12.30 P. M.
History, 2 to 4 P. M.

SEPT. 19. Greek and Intermediate or Advanced German, 9 to 11 A. M.
Natural History (two subjects), 11 A. M. to 1 P. M.
Physics, 2 to 3 P. M.
Chemistry, 3 to 4 P. M.

SEPT. 19. College Year begins, Thursday morning.
Registration of all students at Secretary's office.
Major departments and plans of study for the first half-year must be reported before noon of this day.

SEPT. 21. Regular College exercises begin.

SEPT. 22. Russell Lecture, Sunday, 3 P. M.

DEC. 18. Christmas Recess begins, Wednesday evening.

1896.

JAN. 1. Christmas Recess ends, Wednesday evening.

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TUFTS COLLEGE is situated at College Hill, four miles from Boston, on the Lowell division of the Boston & Maine Railroad. The post-office address is — TUFTS COLLEGE, MASS.

# Tufts College.

TUFTS COLLEGE was founded under a charter granted April 21, 1852. Like so many of the endowed colleges of the country, it owed its beginnings primarily to the need of an educated ministry, felt by an important body of Christians. Its work has, however, always been non-sectarian, a fact amply shown by the membership of its Faculty and student body. The aim of its instruction has been always the pursuit of truth.

After much consideration the work of raising a fund of one hundred thousand dollars for its foundation was undertaken, under the direction of the Rev. OTIS A. SKINNER, of Boston. About sixty thousand dollars was obtained in money. SYLVANUS PACKARD gave his bond for twenty thousand dollars additional, and CHARLES TUFTS gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were OLIVER DEAN, who gave it ninety thousand dollars, and THOMAS A. GODDARD, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. WILLIAM J. WALKER came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

Students were first formally admitted in 1855. The only

building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and there was no other until in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made only for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. HOSEA BALLOU, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the Presidency by the Rev. ALONZO AMES MINER, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. THOMAS J. SAWYER, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882, the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. CHARLES H. LEONARD, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of Ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had a very rapid development, and this year the field has been still farther broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to provide facilities for thorough practical training. The will of the late HENRY B. PEARSON, founding the Bromfield-Pearson High School, and putting it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, carpentry, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

In March, 1875, the Rev. ELMER HEWITT CAPEN, D. D., was

elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June. In 1883 the late PHINEAS T. BARNUM gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw also the completion of the Goddard Chapel, a monument of architectural beauty, given by Mrs. MARY T. GODDARD as a memorial of her husband, the first treasurer of the college, and of the Goddard Gymnasium, a gift from the same source. Dean Hall, a new dormitory, made necessary by the growth of the college, was erected in 1887 from funds bequeathed by the late OLIVER DEAN.

In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, with an entrance requirement, believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the College towards the broadening of its opportunities. There had been a steady growth for many years in the amount of work done and in the number of departments of learning represented. Instead of the five members of the corps of instruction at the opening of the College, the catalogue of 1893-4 showed a body of active instructors, exclusive of the Divinity and Medical Schools, numbering twenty-seven, and offering subjects aggregating 113 and divided into twenty-two departments, exclusive of the Engineering Courses proper. This made it possible to put in operation the present plan of work, which is believed to be an approach to a rational co-ordination of the College and the University systems. Two new departments were instituted in 1892, in response to the tendencies of educational development — Biology and History. The entire staff engaged in the work of instruction in all departments numbers seventy.

In the summer of 1892 the College was by vote of the Trustees opened in all its departments to women on the same terms as to men. Nine women registered in all departments in the fall of that year. There was opened for the women students at the beginning of the present College year, Metcalf Hall, the gift of Mr. ALBERT METCALF, of Newton. This year has also seen the addition to the material equipment of the College of a hall containing students' rooms and a dining hall, and the Chemical Building.

In the summer of 1893 it was decided to open the Tufts College Medical School. This department has enjoyed in the year of its existence an encouraging growth in the number of its students and in the possibilities of its work.

# The College Charter.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the Trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with

the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

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*Instructor in Quantitative Analysis.*

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CATALOGUE: Mr. Start, *Chairman;* Professors Hooper and Maulsby.

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GLEE CLUB: Mr. Lewis, *Chairman;* Professor Graves, and Professor Knight (from the Divinity School).

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BOOKS AND SUPPLIES: Mr. Lewis, *Chairman;* Messrs. Start and Durkee.

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## COURSES IN LIBERAL ARTS.

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| Barney, Charles Neal | *Lynn* | West Hall, 22. |
| Chessmore, Frank Harding | *Jonesville, Vt.* | West Hall, 12. |
| Clark, Charles Dow | *St. Albans, Vt.* | West Hall, 7. |
| Clarke, Edward Perkins | *Mystic, Conn.* | Mid. Hall, 11. |
| Craig, Edward Channing | *Franklin* | West Hall, 24. |
| Dunham, William Roger | *Barre, Vt.* | West Hall, 12. |
| Eaton, Clarence Livingstone, | *Worcester* | West Hall, 2. |
| Fobes, Harold Bartlett | *Portland, Me.* | West Hall, 6. |
| Folsom, Harry Charles | *Oakland, Me.* | West Hall, 6. |
| Frank, Henry Pennell | *Portland, Me.* | Θ Δ X House. |
| Ireland, George Preston | *Springfield* | East Hall, 16. |
| Lynde, Frank Martin | *Williamstown, Vt.* | West Hall, 19. |
| Ricketts, Charles Lucius | *Monson* | West Hall, 22. |
| Saunders, Joseph Henry | *Everett* | Δ T House. |
| Sheldon, James Fitts | *Haverhill* | Dean Hall, 6. |
| Smith, Robert Baxter | *No. Tunbridge, Vt.* | Δ T House. |
| Whitehorne, William Risby, | *W. Somerville* | 14 Elmwood. |
| Winslow, Guy Monroe | *W. Somerville* | Mid. Hall, 11. |

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| | | |
|---|---|---|
| Larrabee, Frank Philip | *Portland, Me.* | West Hall, 1. |

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| | | |
|---|---|---|
| Bailey, Mabel Prescott | *Methuen.* | 114 Professors Row. |
| Barnard, Percival Gates | *Lowell* | West Hall, 29. |
| Belcher, Walter Hermon | *W. Medford* | East Hall, 16. |
| Cheever, Ralph Holbrook | *Portsmouth, N. H.* | Mid. Hall, 10. |
| Congdon, Joseph | *Clarendon, Vt.* | Δ T House. |
| Corridan, Eugene Francis | *Weymouth* | Dean Hall, 13. |

* The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

| | | |
|---|---|---|
| Dillon, David Francis | *Palmer* | Dean Hall, 13. |
| Fickett, Edward Wyman | *Spencer* | Δ Υ House. |
| Goddard, Mary Frances | *W. Somerville* | 46 Newbury St. |
| Hall, Clifford Foster | *Nashua, N. H.* | West Hall, 16½. |
| Hayes, Ethel Munroe | *Somerville* | 252 Medford St. |
| Hill, Blanche Harwood | *Medford* | Main St. |
| Holbrook, Henry William | *Palmer* | West Hall, 24. |
| Johnson, Sidney Breed | *Lynn* | East Hall, 24. |
| Jordan, Charles Gilbert | *E. Braintree* | West Hall, 28. |
| Lewis, Orlando Faukland | *Tufts College* | 20 Professors Row. |
| Lowell, Charles Sumner | *Rockland* | Δ Υ House. |
| Maguire, George Francis | *Rockland* | East Hall, 19. |
| Marvin, Reignold Kent | *Roxbury* | West Hall, 25. |
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| Stover, Josiah Albert | *Kittery, Me.* | Δ Τ Δ House. |
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| | | |
|---|---|---|
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| Burleigh, Winthrop Ridgely, | *Deering, Me.* | East Hall, 20. |
| Butterfield, John McArthur, | *Revere* | East Hall, 4. |
| Cross, Florence Ledyard | *Rochester, N. Y.* | Metcalf Hall. |
| Day, John Boynton Wilson | *Charlestown* | West Hall, 3. |
| Dyer, Florence Gertrude | *Medford* | 9 Everett St. |
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| Gale, Frank Randall | *Barre, Vt.* | West Hall, 16. |
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| Hewitt, Ernest John | *So. Royalton, Vt.,* | West Hall, 15. |
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| Hodge, Edith Louise | *Franklin* | Metcalf Hall. |
| Hodgman, Arthur Ames | *E. Somerville* | East Hall, 4. |
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| Parks, Warren Stone | *Hudson* | Δ Τ Δ House. |
| Perry, Carlton Albert | *Fort Plain, N. Y.,* | West Hall, 23. |

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|---|---|---|
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| Sanford, Rollin Brewster | *Albany, N. Y.* | West Hall, 23. |
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| Wheeler, Alfred Winslow | *Oakland, Me.* | East Hall, 21. |
| White, Winthrop Warner | *Medford* | East Hall, 12. |
| Williams, Franklin Bates | *Roxbury* | Dean Hall, 7. |

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| | | |
|---|---|---|
| Davis, Horace Amos | *Dorchester* | Dean Hall, 7. |

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| | | |
|---|---|---|
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| Avery, Elwood | *Everett* | Mid. Hall, 5. |
| Bancroft, Irving Reed | *Woburn* | Mid. Hall, 7. |
| Bartlett, Ethel Townsend | *Somerville* | 113 Highland Ave. |
| Boomer, Perley Eugene | *Medford* | Mid. Hall, 5. |
| Boutelle, Alice Cleoria Alexandria | *White River Jct., Vt.,* | 90 Curtis St., Som'l. |
| Buck, Lula Adine Howe | *Gorham, N. H.* | 2 Emory St., Med'd. |
| Capen, Samuel Paul | *Tufts College* | 8 Professors Row. |
| Cousens, John Albert | *Brookline* | Dean Hall, 2. |
| Danforth, Rhoda Elizabeth | *E. Norton* | 12 Mt. Pleasant Ave., Somerville. |
| Daniels, George Emory | *Franklin* | East Hall, 23. |
| Donaldson, James Frank | *Salem* | West Hall, 19. |
| Endicott, Annie | 17 *Lafayette Ave., Chelsea.* | |
| Evans, Mary Eliza | 16 *Wright St., Stoneham.* | |
| Flint, Marion Lenore | *Spring St., Bedford.* | |
| Gifford, Fannie Crocker | *Provincetown* | Metcalf Hall. |
| Grant, Beatrice Alexandra | 29 *Pleasant St., Woburn.* | |
| Howard, Guy Charles | *Farmington, Me.* | East Hall, 25. |
| Johnson, Edward Dunbar | *Methuen.* | |
| Jones, Willie Parker | *Stoneham* | East Hall, 3. |
| May, Benjamin Dexter | *Hudson* | Dean Hall, 14. |
| Merrill, Harriette Johnson | *E. Eddington, Me.* | Metcalf Hall. |
| Mitchell, Josephine Laura | *Somerville* | 24 Thorpe Place. |
| Moore, Willis Albert | *Melrose* | East Hall, 29. |
| Olds, Laura Susan | *Barre, Vt.* | 107 Highland Ave., Somerville. |
| Peirce, Frank Lincoln | *Brimfield* | West Hall, 29. |
| Ransom, Clara | *Tufts College* | 80 Professors Row. |

| | | |
|---|---|---|
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| Russell, James Porter | *Farmington, Me.* | East Hall, 25. |
| Small, Sylvanus Griswold | *Baldwinville* | 117 Winthrop St., Medford. |
| Smith, Simeon Conant | *Salem* | West Hall, 16. |
| Smith, Arthur Garfield | *N. Tunbridge, Vt.* | West Hall, 3. |
| Stebbins, Katherine Louise | *W. Somerville* | 30 Day Street. |
| Sweet, Harold Edward | *Attleboro* | Δ T House. |
| Tousey, Coleman | *Tufts College* | 106 ProfessorsRow. |
| Turner, Harriette Alice | *W. Somerville* | 12 Mt. Pleasant Ave. |
| Welch, Walter Frederick | *Stoneham* | East Hall, 3. |
| Whitman, Walter George | *Norway, Me.* | East Hall, 5. |

| | | |
|---|---|---|
| Hammond, Roland, Jr. | *Brockton* | East Hall, 5. |

## ENGINEERING COURSES.

### Senior Class.

| | | |
|---|---|---|
| George, Arthur Lincoln | *Lebanon, N. H.* | Dean Hall, 5. |
| Page, Charles Harrison | *Lowell* | East Hall, 19. |

### Junior Class.

| | | |
|---|---|---|
| Bolles, Robert Henry* | *Marion* | East Hall, 31. |
| Brothers, George Arthur | *Lowell* | West Hall, 26. |
| Hicks, Frank Files | *W. Somerville* | East Hall, 34. |
| Ives, John Nash | *Roxbury* | Δ T Δ House. |
| Ohata, Konosuke | *Ibaraki-ken, Japan,* | East Hall, 27. |
| Perry, Leslie Lawrence | *Rutland, Vt.* | Δ T House. |
| Pierce, Guy Clifford | *Lowell* | West Hall, 25. |
| Sabine, Edward Dana | *Malden* | West Hall, 31. |
| Smith, Warner Daniel | *Marshfield, Vt.* | Mid. Hall, 12. |
| Symonds, Herbert Washburn, | *Hancock, N. H.* | East Hall, 14. |
| Thurston, Arthur | *Haverhill* | West Hall, 26. |
| Whiton, Charles Edward | *Greenwood* | East Hall, 32. |

### Sophomore Class.

| | | |
|---|---|---|
| Barden, Henrie Clark | *No. Attleboro* | West Hall, 27. |
| Browning, Charles Augustus, | *Somerville* | East Hall, 22. |
| Clark, Charles Brooks | *Medford* | East Hall, 17. |
| Crowley, Daniel Francis | *Medford* | 10 West St. |

* Deceased (November 8, 1894.)

| | | |
|---|---|---|
| Edmands, John Stetson . . | *Somerville* . . . | 86 Avon St. |
| Eldridge, Harold Norton . . | *Dexter, Me.* . . . | West Hall, 9. |
| Fenton, Robert Hall . . . | *Willimantic, Conn.*, | East Hall, 33. |
| Garcelon, Herbert Irving . | *W. Somerville* . . | East Hall, 22. |
| Graves, Wallace Humphrey, | *Bangor, Me.* . . | East Hall, 11. |
| Green, Charles Boden . . . | *Lynn* . . . . . | Δ T Δ House. |
| Hall, Walter Davis . . . . | *Medford* . . . . | East Hall, 12. |
| Hammond, Charles Lincoln . | *Atlantic* . . . . | East Hall, 13. |
| Healey, Rolla Edwin . . . | *Claremont, N. H.*, | Δ T Δ House. |
| Hill, George William . . . | *Stoneham* . . . | Δ T Δ House. |
| Howe, Wilson Tyler . . . | *E. Brookfield* . . | West Hall, 32. |
| Huston, Milton . . . . . | *W. Falmouth, Me.*, | East Hall, 9. |
| Lane, Harry Alfred . . . | *Foxboro* . . . . | Dean Hall, 10. |
| Merrill, Meldon Humphrey . | *Yarmouth, Me.* . | East Hall, 14. |
| Mitchell, Stephen Clarence . | *Hull* . . . . . | Dean Hall, 10. |
| Montgomery, Charles Eland, | *Lowell* . . . . | West Hall, 17. |
| Nash, Henry Ray . . . . | *Bradford* . . . | East Hall, 28. |
| Parker, Harry Orville . . . | *Atlantic* . . . . | East Hall, 13. |
| Plorme, Max Alaric . . . | *Rocky Hill, Conn.*, | West Hall, 9. |
| Randlett, Fred Morse . . . | *Lawrence* . . . | East Hall, 15. |
| Richardson, George Edward, | *Lowell* . . . . | West Hall, 17. |
| Robinson, Albert DeMerritt, | *Windham, Me.* . | Dean Hall, 9. |
| Russell, Howard Irving . . | *W. Somerville* . . | East Hall, 22. |
| Ryder, Delano Richmond . . | *Marion* . . . . | East Hall, 28. |
| Taylor, William Gavin . . | *Medford* . . . . | East Hall, 34. |
| Thayer, Arthur Ellis . . . | *W. Somerville* . . | East Hall, 22. |
| Walker, Charles Perley . . | *Lawrence* . . . | Dean Hall, 10. |
| Weeks, Stephen Merrill . . | *Orford, N. H.* . . | East Hall, 33. |
| Wheeler, Walter Stedman . | *Hudson* . . . . | Dean Hall, 14. |
| Wyman, Walter Scott . . . | *Oakland, Me.* . . | East Hall, 21. |

### Freshman Class.

| | | |
|---|---|---|
| Abbott, Cushman . . . . | *Dover, N. H.* . . | Dean Hall, 2. |
| Ahearn, George Edward . . | *Arlington* . . . | Mid. Hall, 5. |
| Allen, Theodore Brooks . . | *E. Braintree* . . | East Hall, 2. |
| Andrews, Herbert Woodbury | *Lynn* . . . . . | East Hall, 11. |
| Barker, Fred Percy . . . | *Waltham* . . . | West Hall, 11. |
| Bates, Henrie Evans . . . | *Marion* . . . . | East Hall, 31. |
| Brown, Thomas Dalton . . | 30 *N. Russell St., Boston.* | |
| Byam, Frank Albert . . . | *Waltham* . . . | West Hall, 9. |
| Chapin, Harry Taylor . . . | *Monson* . . . . | West Hall, 31. |
| Chase, Josiah Brown, Jr. . | *W. Newton* . . . | West Hall, 8. |
| Christian, Leroy Bernard . | *Auburn, Me.* . . | Mid. Hall, 9. |
| Chubb, Thomas Briggs . . | *Allston* . . . . | Mid. Hall, 7. |

| | | |
|---|---|---|
| Clark, Warren Stewart . . | *St. Albans, Vt.* . | West Hall, 7. |
| Clark, Irving Stockton . . | *Boston* . . . . | Mid. Hall, 9. |
| Cole, John Appleton . . . | *Gloucester* . . . | East Hall, 10. |
| Cummings, Morton Everett. | *Medford* . . . . | East Hall, 16. |
| French, Edmund Merritt . . | *W. Hingham* . . | East Hall, 26. |
| Gilman, John Dexter . . . | *Boston* . . . . | West Hall, 4. |
| Goodwin, Fred Marion . . | *Houghton St., Dorchester.* | |
| Harwood, George Alec . . | *Boston* . . . . | Mid. Hall, 10. |
| Jacobs, Benjamin Foster, Jr. | *Medford* . . . . | West Hall, 27. |
| Jones, Guy Edward . . . | *Marlow, N. H.* . | East Hall, 30. |
| Lewis, Emory Sabine . . . | *Meriden, Conn.* . | East Hall, 6. |
| Littleton, James Norman . | *Hingham Centre* . | East Hall, 26. |
| Maddocks, John Arthur . . | *Boothbay Harbor, Me.*, | West Hall, 21. |
| Morgan, Albion Bateman . | *Falmouth, Me.* . . | East Hall, 9. |
| Olmstead, Elmer Sheridan . | *Somerville* . . . | 15 Sewall St. |
| Parker, Richard Bentley . . | *Medford* . . . . | West Hall, 27. |
| Parker, Charles William . | *Reading* . . . . | West Hall, 1. |
| Patterson, Walter Arthur . | *Waltham* . . . | West Hall, 11. |
| Perkins, Llewellyn Rood . | *So. Woodstock, Vt.*, | 80 Professors Row. |
| Preble, Ernest Orello . . . | *Webster* . . . . | West Hall, 4. |
| Ray, Frederick Nash . . . | *Bradford* . . . | East Hall, 15. |
| Richardson, Ernest Stanley, | *Danvers* . . . . | West Hall, 13. |
| Robinson, George Nelson . | *Winchester* . . . | East Hall, 6. |
| Savage, James Arthur . . | *W. Somerville* . . | 25 Fairmount Ave. |
| Schoolfield, Frank Robert . | *Baltimore, Md.* . | East Hall, 1. |
| Shaw, Edwin Adams . . . | *W. Somerville* . . | 18 Bellingham St. |
| Simpson, John Fred . . . | *S. Newmarket, N.H.*, | $\Delta$ $T$ House. |
| Smith, Kilby Page . . . . | *Waltham* . . . | West Hall, 8. |
| Titus, Anson Merrill . . . | *W. Somerville* . . | 19 Conwell Ave. |
| Town, Frederick Edward . | *Washington, D. C.* | East Hall, 1. |
| Wells, Roy Titus . . . . | *Foxboro* . . . . | East Hall, 30. |

### Special Students.

| | | |
|---|---|---|
| Allen, Nahum Windsor . . | 514 *Main St., Malden.* | |
| Atwood, Louise Russell . . | *Medford* . . . . | 4 Garden St. |
| Bailey, Dora Albonetta . . | *Somerville* . . . | Highland Ave. cor. Central St. |
| Bailey, Arthur Low . . . | *Methuen* . . . . | 90 Curtis St. |
| Burbank, Ralph Lyman . . | *Medford* . . . . | East Hall, 32. |
| Chick, Walter Everett . . | *Medford* . . . . | East Hall, 34. |
| Clement, Sumner . . . . | *Newton Centre* . | $\Delta$ $T$ House. |
| Conway, Arthur Franklin . | *Tewksbury* . . . | Mid. Hall, 5. |
| Cummings, Maidelle Leslie, | *W. Somerville* . . | Metcalf Hall. |
| Dolbear, Katy Ella . . . . | *Tufts College* . . | 134 Professors Row. |

| | | |
|---|---|---|
| Graves, Charles Brown | *Marblehead* | West Hall, 13. |
| Hayward, Daniel Baxter | *E. Braintree* | West Hall, 28. |
| Hornbrooke, Dudley | *Newton* | Dean Hall, 12. |
| Mackie, Wendell | *Boston* | Dean Hall, 3. |
| Moakler, Olive Frances | 76 *Adams St., Medford.* | |
| Noyes, Charles Ellsworth | *Lisbon, N. H.* | Δ Τ House. |
| Parke, Robert Hayward | *Monson* | East Hall, 6. |
| Pearson, George Frederick | *Halifax, N. S.* | Dean Hall, 11. |
| Pindar, Ralph Waldo | *Lowell* | Θ Δ Χ House. |
| Potter, William Edward | *Lowell* | West Hall, 32. |
| Putnam, Frank Wendell | *Charlestown* | Δ Τ House. |
| Rowbotham, George Walter, | *Boston* | East Hall, 22. |
| Ruggles, Louise Kingsley | 24 *Charles St., Wakefield.* | |
| Sibley, Carrie Hunter | *Spencer* | Metcalf Hall. |
| Walker, John Meredith | *Waltham* | West Hall, 11. |
| Wilson, May | *Somerville* | 40 Vinal St. |
| Winch, Sadie Chapman | *Lawrence* | Metcalf Hall. |

## SUMMARY.

| | | |
|---|---|---|
| GRADUATES | 6 | |
| COURSES IN LIBERAL ARTS: | | |
| Seniors | 20 | |
| Juniors | 29 | |
| Sophomores | 27 | |
| Freshmen | 41 | |
| | — | 117 |
| ENGINEERING COURSES: | | |
| Seniors | 2 | |
| Juniors | 12 | |
| Sophomores | 34 | |
| Freshmen | 43 | |
| | — | 91 |
| SPECIAL STUDENTS | 26 | |
| | — | 26 |
| TOTAL IN COLLEGE OF LETTERS | | 234 |
| TOTAL IN DIVINITY SCHOOL | | 48 |
| TOTAL IN MEDICAL SCHOOL | | 94 |

# Requirements for Admission.

## SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for the several courses will be found in the schedule of examination groups on pages 33 and 34.

Latin.

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. CÆSAR. — Gallic War, Books I.–IV.

3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. VIRGIL. — Æneid, Books I.–VI.

5. OVID. — Metamorphoses, 2,500 lines.

6. LATIN COMPOSITION. — Collar's Latin Composition, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

Greek.

7. GREEK GRAMMAR. — Hadley-Allen's or Goodwin's Greek Grammar, including Prosody.

8. XENOPHON. — Anabasis, four books.

9. HOMER. — Iliad, three books.

10. GREEK COMPOSITION. — The translation into Greek of a connected passage of English prose. Woodruff's Greek Composition is recommended as a drill-book.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

German.

11. ELEMENTARY GERMAN.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak and of the more usual strong verbs; the more common prepositions;

rman. the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.]

(*b*) Ability to translate a passage of simple prose at sight, a vocabulary of the less-used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose with a few lyric poems.]

(*c*) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.]

**12.** INTERMEDIATE GERMAN.

(*a*) The candidate must give evidence of a thorough knowledge of the elementary grammar (see above, 11*a*), and of the use of modes and tenses.

(*b*) He must have translated the equivalent of four hundred pages of German, including Wilhelm Tell (Schiller), and twenty pages of lyrics or ballads.

(*c*) He must be able to pronounce German, and to render simple English sentences into that language..

**13.** ADVANCED GERMAN.

(*a*) Proficiency in more advanced grammar. In addition to a thorough knowledge of accidence (including the elements of word-formation) and of the principal values of prepositions and conjunctions, the candidate must be familiar with the essentials of German syntax, particularly that of the modal auxiliaries and the subjunctive and infinitive modes.

(*b*) Ability to translate ordinary German, to be acquired by the reading, in addition to the elementary requirement, of the following works: Der Fluch der Schönheit (Riehl); Aus dem Staat Friedrichs des Grossen (Freytag); Die Harzreise (Heine); the first three books of Dichtung und Wahrheit (Goethe); Minna von Barnhelm (Lessing); Wilhelm Tell and Das Lied von der Glocke (Schiller); and thirty pages of lyrics or ballads.

(*c*) Ability to write in German a paragraph upon an assigned subject chosen from the work specified in the preceding section.

[While, at the examination, matters of very subordinate interest or of minor detail will not be set as subjects for composition, it is hoped that teachers may be led by this requirement to stimulate from the beginning the pupil's interest in the subject-matter of the works read in preparation.]

**14. Elementary French.** French.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives"; the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under Elementary German (*a*).]

(*b*) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(*c*) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German (*c*).]

**15. Intermediate French.**

(*a*) and (*c*) as above.

(*b*) He must have translated the equivalent of five hundred pages of French, including the plays Mademoiselle de la Seiglière (Sandeau) and Athalie (Racine).

**16. Advanced French.**

(*a*) Proficiency in more advanced grammar. In addition to a knowledge of the accidence and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, especially the use of modes and tenses, and with the more frequently recurring idiomatic phrases.

(*b*) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including Le Siège de Berlin and La dernière Classe (Daudet); Colomba (Mérimée); Mademoiselle de la Seiglière, the play (Sandeau); Jeanne Darc (Henri Martin); and one play each of Corneille, Racine, and Molière.

(*c*) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German (*c*).]

**17. Arithmetic**, including the Metric System. Mathematics.

**18. Algebra**, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

Mathematics.

19. PLANE GEOMETRY.

20. SOLID GEOMETRY.

History.

21. ANCIENT HISTORY (Greece and Rome), with either

(*a*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or

(*b*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The amount of preparation required is indicated by the following list of works: For Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools.

English.

22. ENGLISH.

*Note.* — No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.* — A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1895. — Shakespeare's Twelfth Night; The Sir Roger de Coverley Papers in *The Spectator;* Irving's Sketch Book; Scott's Abbot; Webster's First Bunker Hill Oration; Macaulay's Essay on Milton; Longfellow's Evangeline.

1896. — Shakespeare's A Midsummer Night's Dream; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Scott's Woodstock; Macaulay's Essay on Milton; Longfellow's Evangeline; George Eliot's Silas Marner.

1897. — Shakespeare's As You Like It; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

1898. — Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

English.

2. *Study and Practice.* — This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clearness and accuracy. The books set for this part of the examination will be: —

1895. — Shakespeare's The Merchant of Venice; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Macaulay's Essay on Addison.

1896. — Shakespeare's The Merchant of Venice; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Webster's First Bunker Hill Oration.

1897. — Shakespeare's The Merchant of Venice; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson.

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

Sciences.

23. PHYSICS. — The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department.

24. CHEMISTRY. — Remsen's Briefer Course or its equivalent.

25. NATURAL HISTORY. — Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

## EXAMINATION GROUPS.

For courses leading to degree of A. B.

Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups: —

### Group I.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

For courses leading to degree of A. B.

**Group II.**

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16.
FRENCH, 14. } { GERMAN, 11.

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

For courses leading to degree of Ph. B.

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

**Group III.**

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 12. } or { FRENCH, 14 and 15.
FRENCH, 14. } { GERMAN, 11.

**Group IV.**

MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16. } or { GERMAN, 11 and 12. / FRENCH, 14 and 15.
FRENCH, 14. } { GERMAN, 11. }

PHYSICS, 23.
CHEMISTRY, 24.
NATURAL HISTORY, 25.

[LATIN, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, GERMAN, 11 and 12, or FRENCH, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group III in modern languages, and of elementary work in three scientific subjects.

For Candidates for Engineering Courses.

Candidates for the courses leading to the degrees of Bachelor of Electrical or Civil Engineering will be required to take the subjects comprised in

Group V.

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or FRENCH, 14.
ENGLISH, 22.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be candidates for admission to the Freshman class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Registrar of the College) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the

teacher that the candidate is well prepared to enter upon a college course. Certificates must be in the hands of the Registrar at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts or for that of Bachelor of Philosophy, according to the examination group upon which they are admitted to the college. In either case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation. They may obtain the degree of Bachelor of Arts on the satisfactory completion of twenty-four term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the course students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accomplished by the student in regular standing counts toward the

attainment of the degree. The period within which that may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS.

[NOTE. — Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows: —

| | TERM HOURS. |
|---|---|
| LANGUAGES (Latin, Greek, French, German; each student to take *three*) | 18 |
| ENGLISH (Rhetoric, Composition, Themes, Oratory) | 12 |
| MATHEMATICS | 6 |
| SCIENCE (Physics, Chemistry, Biology; each student to take *one*) | 6 |
| MENTAL AND MORAL SCIENCES (Psychology, Logic, Ethics, History, Economics; each student to take *one full or two half* subjects) | 6 |
| PHYSICAL TRAINING | 2 |
| A total of | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, but the prescribed work in the group of Mental and Moral Sciences cannot be taken before the second year except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the

prescribed groups as a part of the eighteen hours which he is required to give to his major department. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student shall make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B as an average for his entire work.

**Summary.**

| | | | |
|---|---|---|---|
| Prescribed work | 50 | term | hours. |
| Major department | 18 | " | " |
| Collateral subjects | 18 | " | " |
| Free electives | 42 | " | " |
| | 128 | " | " |

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments: —

| | |
|---|---|
| ENGLISH LITERATURE. | POLITICAL SCIENCE. |
| FRENCH. | MATHEMATICS. |
| GERMAN. | PHYSICS. |
| LATIN. | CHEMISTRY. |
| GREEK. | BIOLOGY. |
| HISTORY. | ENGINEERING. |

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given in 1894–95. In most cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts will be found on page 68. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

PROFESSOR SHIPMAN.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all, but a list is furnished from which each writer may select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification, this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. A text-book is used as the basis of instruction, and is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition.

SUBJECTS.

**1.** — Composition, Lectures, Discussion of Papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

**2.** — Rhetoric, with practical exercises. Second year. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). MR. WHITTEMORE.

**3.** — Composition and Themes. Second year. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. WHITTEMORE.

**4.** — Principles and Practice of Debate. Open to students who have completed 1, 2, and 3 or 5. *Tuesday and Thursday at* 8.45 (*first half-year*). PROFESSORS SHIPMAN AND MAULSBY.

**5.** — Daily Composition. Elective or optional, with 4. *Five themes weekly* (*either half-year*). PROFESSOR SHIPMAN AND MR. WHITTEMORE.

Subjects 1, 2, 3, and 5, or 4 will constitute, with Oratory 1, the prescribed work in English.

**6.** — Rhetoric (advanced course). Elective for students who have completed English 2, with 3 or 5. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

**7.** — Composition (advanced course). Elective for students who have completed the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

## ORATORY.

PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out, and, so far as possible, remedies suggested. The required course aims at reading that shall be intelligent, natural, and forcible. Attempt is made to develop, both in voice and gesture, spontaneous expression from the mental side. In the elective course opportunity is given for individual presentation of selections from standard literature, and for practice in debate on subjects of current interest. Throughout the work the student meets the instructor personally, for rehearsal and criticism.

SUBJECTS.

1 (*a*). — Class exercises in vocalization and gesture; reading of one of Shakespeare's plays; individual recitation. *Tuesday at* 8.45.
PROFESSOR MAULSBY.

1 (*b*). — Class exercises in vocalization and gesture; study of selections from senatorial oratory; individual declamation. *Saturday at* 11.45. PROFESSOR MAULSBY.

2 (*a*). — Study of selections from Shakespeare and Browning; frequent individual presentation of standard poetry and prose. *Friday at* 2. PROFESSOR MAULSBY.

2 (*b*). — Practice in debate on subjects of local and national discussion. *Tuesday at* 2. PROFESSOR MAULSBY.

## ENGLISH LITERATURE.

PROFESSOR MAULSBY.

The study of our literature offers opportunity for acquaintance with the work of selected English writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published

criticism that clusters about the great writers, are not neglected, although given a subordinate place. The ultimate object of the course is mainly the unmeasured yet positive culture that inheres in open-minded intercourse with the masters in literature. The method pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. Students are advised to adhere as closely as possible to the order of subjects as indicated by the numbering. The library contains multiple copies of many of the authors read.

SUBJECTS.

[1. — Chaucer. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR MAULSBY.]

Morris's edition of the Prologue is carefully read, followed by selected tales and minor poems. Attention is paid to the etymology of Chaucerian forms, and to comparison of the English of the fourteenth with that of the nineteenth century. An outline of the development of English literature from the beginning until Chaucer's day is given in lectures.

2. — Shakespeare. *Monday, Wednesday, and Friday at* 3 (*second half-year*). PROFESSOR MAULSBY.

The aim in the study of Shakespeare is first to understand him, then to appreciate his poetic and dramatic workmanship. The minute study of a few plays is followed by the rapid reading of nearly the whole of the remainder. An outline of the course of our literature from Chaucer to Milton is presented by lecture.

3. — The Classic Period. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR MAULSBY.

Selected authors from Milton to Johnson are considered, with attempt to note and account for the essential resemblance in their styles. The lyric poets of the period are assigned for individual study. Subjects 1 and 3 are given in alternate years.

4. — The Revolutionary Period. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.

Selection is made from the following list for treatment in the class-room: Burns, Cowper, Byron, Shelley, Keats, Coleridge, Wordsworth, Landor, Lamb, De Quincey. Each member of the class makes a personal study of some other writer of the period.

**5.** — Victorian Authors. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

The chief emphasis is placed upon Carlyle, Ruskin, Tennyson, and Browning, a part of the work of each being minutely studied, and a greater quantity rapidly read. Each member of the class presents a study in literary criticism, based upon copious reading of some contemporary writer.

[**6.** — American Literature. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.]

It is attempted in a single term to outline the history of literature in the United States, from its beginning until now, the less eminent figures being rapidly treated in lectures, in order that the more important names may receive due consideration. Subjects 5 and 6 are given in alternate years.

**7.** — Study of a Special Topic. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). PROFESSOR MAULSBY.

In successive years the following topics are studied: (*a*) the history of the drama, (*b*) the principles of literary criticism, (*c*) the development of the novel the first of these being assigned for the current year. Unless applicants have pursued English literature for at least nine term hours, the permission of the instructor must be obtained in order to take this course.

**8.** — Anglo-Saxon. *Monday, Wednesday, and Friday at* 10.45 (*first-half-year*). PROFESSOR MAULSBY.

The aim is to read selections from the early monuments of the language, paying only so much attention to grammatical details as will subserve this end. A few lectures sketch the history of English.

[**9.** — Poetry and Drama of the Restoration. *Monday, Wednesday, and Friday at* 3 (*second half-year*).

Given in 1895–96. MR. WADE ]

Such topics as the origin of the heroic drama, Shakespeare during the Restoration, the influence of France, the reformation of the stage by Jeremy Collier, will be briefly treated in lectures, and parallel reading will be required in authors of the period. Throughout the course endeavor will be made to present a clear view of the social characteristics of the time as reflected in its literature, and to emphasize the religious, social, and moral transformation then in progress.

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or advanced require-

ment. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

SUBJECTS.

1. — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises; Bernhardt's Im Zwielicht, II.; Riehl, Burg Neideck; Buchheim's Balladen und Romanzen. *Tuesday, Thursday, Saturday, at* 8.45. PROFESSOR FAY.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate German. Review of grammatical principles, especially of syntax, with advanced exercises in composition; Scheffel, Ekkehard (Wenckebach edition); Freytag, Der Rittmeister von Alt-Rosen, Aus dem Staat Friedrichs des Grossen; Buchheim's Deutsche Lyrik. *Tuesday, Thursday, Saturday, at* 9.45. PROFESSOR FAY.

German 2 is intended for those who have passed the examination in Elementary German. It is possible for a student who has excelled in the work of German 1, and who shall have done a prescribed amount of outside reading, to omit this course and enter German 3.

3. — First half-year. Work introductory to classic authors. Lessing, Minna von Barnhelm; Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. Second half-year. Work in the rapid reading of recent prose authors; one theme. *Monday, Wednesday, Friday, at* 9.45. PROFESSOR FAY.

Students who have passed their entrance examinations in Intermediate German continue their work in German 3. Those by whom a knowledge of the classic authors is especially desired may substitute the second half-year of German 4 for that of this subject. German 3 may be taken as an additional half-subject by more advanced students.

4. — Schiller and Goethe: Egmont, Maria Stuart, Wallenstein, with collateral readings in historical prose; two themes. *Tuesday, Thursday, Saturday, at* 11.45. PROFESSOR FAY.

German 4 is taken by those who pass the entrance examination in Advanced German. The last half-year's work in German 3 may be taken collaterally as a half-subject.

5. — Lessing and Goethe: Nathan der Weise, Laocoön, Tasso, Iphigenie auf Tauris, Faust, with collateral reading, especially from Düntzer's Commentaries. *Monday, Wednesday, Saturday, at* 11.45. PROFESSOR FAY.

6. — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. A thesis is required of candidates for honors. *Monday, Wednesday, Friday, at* 10.45. PROFESSOR FAY.

## FRENCH.

PROFESSOR FAY AND MR. LEWIS.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

1. — Elementary French. The essentials of grammar, with composition; Whitney's French Reader; Masson's French Classics, Vol. V.; during second half-year, collateral reading of short prose works. *Tuesday, Thursday, Saturday, at* 9.45. MR. LEWIS.

French 1 is the equivalent of the entrance requirement in Elementary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

**2.** — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax; Exercises in Composition; Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière; Selections from Super's Readings from French History; Racine, Athalie; collateral reading of standard prose works. *Tuesday, Thursday, Saturday, at* 8.45. MR. LEWIS.

French 2 is intended for those who have passed the entrance examination in Elementary French. It is possible for a student who has excelled in the work of French 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

**3.** — First half-year. Introductory work in Seventeenth Century Classics. Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Second half-year. Course for the rapid reading of recent authors. *Monday, Wednesday, Friday, at* 8.45. MR. LEWIS.

Students who have passed the entrance examination in Intermediate French continue their work in French 3. Those by whom a knowledge of the classic authors is especially desired may substitute the second half-year of French 4 for that of this course. French 3 may be taken as an additional half-subject by more advanced students.

**4.** — First half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. Second half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII$^{e}$ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. *Monday, Wednesday, Friday, at* 8.45. PROFESSOR FAY.

French 4 is taken by those who pass the entrance examination in Advanced French. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

**5.** — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Hugo, Lamartine, de Musset, Balzac, George Sand, Sainte-Beuve, Taine, and selections from contemporary authors. *Monday, Wednesday, Friday, at* 3. MR. LEWIS.

[**6.** — Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. A thesis is required of candidates for honors. PROFESSOR FAY.]

## ITALIAN.

PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading

knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

SUBJECT.

1. — Grandgent's Grammar and Composition; De Amicis, La Vita Militare; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

PROFESSOR DEARBORN.

The work in this department is arranged with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, by reading Latin authors and by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early part of the work the forms and construction of the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The advanced work is especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays and read and criticised before the class.

SUBJECTS.

1. — Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those electing Latin as a prescribed language.

2. — Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR DEARBORN.

3. — Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR DEARBORN.

4. — Cicero; Terence; Catullus; Quintilian. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR DEARBORN.

5. — Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when taken should be taken simultaneously with in the Freshman year.

[6. — Roman satirists, with special reference to the works of Horace and Juvenal. *Tuesday and Thursday from* 4 to 5.30. PROFESSOR GRAVES.]

7. — Terence (Andria, Adelphoe, Heauton Timorumenos, and Phormio); Plautus (Captivi, Menaechmi, Trinummus). *Tuesday and Thursday from* 4 *to* 5.30. PROFESSOR GRAVES.

Latin 6 and 7 are offered in alternate years, 7 being open in 1894–95. Although any one is eligible who has completed Latin 3, they are intended primarily for students in the graduate department. Lectures are given in 6 on the history of Roman satire and on the satirists, and in 7 on the development of the theatre, the *sermo plebeius*, and the styles of Plautus and Terence.

8. — Cicero (Brutus and Second Philippic); Plautus or Terence; Lucretius (Books I.–III.); Tacitus (Dialogue or Annals); Comparative Grammar of Greek and Latin (King and Cookson or Henry); History of the Latin Language and Literature. *Three hours a week.* PROFESSOR DEARBORN.

This subject is for graduate students.

## GREEK.

PROFESSORS SCHNEIDER AND GRAVES.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the

practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

SUBJECTS.

1. — Elementary. Goodwin's Grammar; White's Beginner's Book; Xenophon (Anabasis or Hellenica); Homer (Iliad I.–III.); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR GRAVES.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

2. — Xenophon (Memorabilia or Cyropœdia); Herodotus (Books VI. and VII.); Homer (Phæacian Episode of the Odyssey); Sophocles (Antigone); Greek Composition. *Monday, Wednesday, and Friday at* 2. PROFESSOR GRAVES.

Greek 2 is the course for students entering with Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

3. — Lysias (Selections); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.

[4. — Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.]

Greek 3 and 4 are offered in alternate years and are open to those who have taken Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and moods and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

5. — Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Tuesday, Thursday, and Saturday at* 9.45.

PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

6. — Plato (Symposium); Aristotle (Ethics, Books I.-IV., or Politics); reading at sight in Herodotus and Lucian. *Monday, Wednesday, and Friday at* 2. PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

7. — Topics in Greek History: reading at sight in Homer and Euripides; Greek Composition. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR GRAVES.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

8. — Demosthenes (Private, Hellenic, Olynthiac, and Philippic Orations); Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.

[9. — Study of the Sources of Greek History; critical reading of Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

PROFESSOR GRAVES.]

[10. — Plato (Gorgias, Phaedo, Republic I.-V.); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 8 being the subject for 1895–96. These subjects are intended

for those wishing to pursue graduate work in Classical Philology. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek history, and in 10 on the life, works, style, and philosophy of Plato.

## HEBREW.

PROFESSOR CURTIS.

Two subjects, each occupying two hours a week for a year, are offered in Hebrew, enabling the student to obtain a knowledge of the rudiments of the language, and, if desired, to pursue it further and obtain some knowledge of the literature. It will be noticed that these subjects are given in alternate years.

SUBJECTS.

[1. — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism. *Tuesday and Thursday at* 8. PROFESSOR CURTIS.]

2. — Advanced Hebrew; Readings from Ancient, Middle, and Late Hebrew; Discussion of the Critical Questions involved. *Tuesday and Thursday at* 3. PROFESSOR CURTIS.

## PHILOSOPHY.

PROFESSOR SHIPMAN.

In this department are included Logic, Psychology, Ethics, and the History of Philosophy. The department is not at present organized to offer a major course, but its work is coordinated and practically continuous. Consideration is given to Psychology from the standpoint of recent physico-psychological investigation as well as from the philosophical side. In Logic two half-subjects offer opportunity for a study both of deduction and of induction. The work in the History of Philosophy continues through one year, and is so far extended as to include various recent discussions.

The work in Ethics embraces the study of ethical theory and practice. In addition to recitations from the text-book, students conduct their own investigations, under the direction of

the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of modern ethical doctrines.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times.

Lectures and criticisms in the class-room supplement the students' personal investigations.

SUBJECTS.

1. — Psychology. Manifestations of Mind through Consciousness. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*).

PROFESSOR SHIPMAN.

2. — Physical Psychology. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

The first subject presents psychology in its historical relations, studies the manifestations of mind through consciousness, in the manifold products of individual and collective activity, and prepares the way for Philosophy. The second deals with the methods and results of recent psychological investigation, with psychology as a branch of physics.

3. — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

4. — Logic (advanced course), especially Inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).

PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 4 is open only to such students as have satisfactorily completed 3. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

5. — Ethics; Calderwood's Moral Science, with references to Kant's Metaphysic of Ethics and Ueberweg's History of Philosophy. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).

PROFESSOR SHIPMAN.

**6.** — **Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism.** *Tuesday, Thursday, and Saturday at* 10.45 *(second half-year).* PROFESSOR TOUSEY.

Philosophy 6 follows 5 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 5.

**7.** — **The History of Philosophy.** *Monday, Wednesday, and Friday at* 2. PROFESSOR SHIPMAN.

The discussion includes the problems of philosophy and the spirit in which it should be pursued, and this is followed by an outline of the general history of philosophy and by specific study of one or more systems.

**8.** — **The Philosophy of Religion.** *Monday, Wednesday, and Friday at* 3 *(first half-year).* PROFESSOR KNIGHT.

## HISTORY.

MR. START.

The work of this department is so arranged that the student may obtain a general knowledge of the significance, sources, and methods of history, and of the large facts in the development of civilization, passing from this to a more thorough study of limited periods. The essential unity of history is kept constantly in view, as well as the bearing of the experience of the past upon the conditions and problems of to-day, especially in our own country. Much of the instruction is by lectures, but independent work on the part of the student is sought through the study of special topics, references for parallel readings, the preparation of theses, and by general class discussions. The aim is not so much the accumulation of a great mass of facts, as an adequate comprehension of the meaning of significant historical events, and of the method to be employed in collating and using them.

Major students in History should acquire a working knowledge of German and French, at least, among the languages. Psychology and Political Science are important collaterals. Knowledge of Literature, Philosophy, and of the natural sciences, especially of Biology, are also of great value, and in some cases requisite for successful historical investigation.

SUBJECTS.

1. — Introductory study of General History and Historical Method. Lectures and theses. *Tuesday, Thursday, and Saturday at* 10 45 (*first half-year*). MR. START.

History 1 is introductory to all succeeding subjects in History, and must be taken by students wishing to go on with the latter. It is intended to give a general knowledge of the nature and progress of civilization, and the means by which it is studied. Complete in itself, it is the foundation for special study of limited periods. It is prescribed for Junior engineering students and is open for election by all others. It will not be accepted for an advanced degree.

2. — European History since 1648. The political revolution and formation of modern states. Lectures, parallel readings, theses, and topical work. Open to students who have completed History 1. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). MR. START.

4. — American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, parallel readings, theses, and topical work. Open to students who have taken History 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. START.

5. — Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources, and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 8.45. MR. START.

History 4 and 5 form a connected course in the history of our own country from the opening of the New World to the present time. While this is not made a necessary condition, it is desirable that they be preceded by History 2.

8. — The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR KNIGHT.

9. — Seminary in American History. Research work with the sources. Open to major students in History who have completed twelve term hours of work in the department. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.* MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and ob-

taining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library.

**10.** — The History of To-day. Practical work in examining, classifying, and preparing for reading and study the history of the current year. Consideration of principles of criticism, and laws of evidence. *Open only to resident graduates who have taken History* 9. MR. START.

This subject, for graduate students, is intended to bring to bear the critical faculty and scientific historical principles upon the progress and the questions of to-day, and incidentally to prepare material which may be of value in the study of our history at a later time. Hence it is only offered to graduates who have done special work in History. It may be taken by graduate students from other colleges who have done undergraduate work equivalent to that required of graduates of Tufts College. It is believed that it will be a useful introduction to journalism, law, the Christian ministry, or to a life of public activity as well as valuable for the historical specialist.

## POLITICAL SCIENCE.

PRESIDENT CAPEN.

In this department are included Ancient and International Law and Economics. In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics.

Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

Special work will be arranged in connection with some of the problems of government for those who take Political Science as a major subject, and who have completed 1, 2, and 3.

SUBJECTS.

1. — Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Tuesday, Thursday, and Saturday at* 8.45.
PRESIDENT CAPEN.

2. — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).
PRESIDENT CAPEN.

3. — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).
PRESIDENT CAPEN.

4. — Special work in problems of Government for students electing Political Science as a major department. PRESIDENT CAPEN.

## MATHEMATICS.

PROFESSOR BROWN.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning

of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

SUBJECTS.

1. — Wells's College Algebra; Baker's Solid Geometry; Hobson and Jessop's Trigonometry; applications of Trigonometry. Required of students in all courses. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR BROWN.

2. — Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*).

3. — Nichols's Analytic Geometry. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR BROWN.

4. — Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR BROWN.

5. — Differential and Integral Calculus, Osborne's. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR BROWN.

6. — Differential and Integral Calculus (advanced course). *Monday, Wednesday, and Friday at* 10.45. PROFESSOR BROWN.

7. — Theory of Equations and Determinants; Weld's Theory of Determinants; Hanus's Elements of Determinants. *Monday, Wednesday, and Friday at* 8.45 (*second half-year*). PROFESSOR BROWN.

## PHYSICS.

PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given,

and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

SUBJECTS.

1. — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

**2.** — Electricity and Magnetism; Heat; Light; work in Laboratory. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DOLBEAR.

**3.** — Advanced Studies in Electricity, Heat, and Light, with experimental work in each. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR DOLBEAR.

**4.** — Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week (second half-year).* MR. MYRICK.

**5.** — Electricity: Theory of Measurements. *Two hours a week.* Electrical Laboratory: Simple Measurements and Tests. *Four hours a week.* MR. MYRICK.

**6.** — Electricity. Thompson's Dynamos; Kapp's Electrical Transmission of Energy. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

**7.** — Pearson's Grammar of Science. Recitations and lectures. *Tuesday and Thursday at* 2 *(first half-year).* PROFESSOR DOLBEAR.

**8.** — Spencer's First Principles. *Tuesday and Thursday at* 2 *(second half-year).* PROFESSOR DOLBEAR.

**9.** — Electricity (advanced work). Alternating Currents. Fleming, Bedell, and Crehore. *Three hours a week.* PROFESSOR HOOPER.

**10.** — Electrical Laboratory (advanced course). Tests of Dynamos, Motors, Accumulators, Camps. PROFESSOR HOOPER.

## CHEMISTRY.

PROFESSOR MICHAEL.

The work in this department begins with the subject of General Chemistry, which is open for election by the students of the courses in Liberal Arts and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, where the student will have an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examina-

tions. The work in Organic Chemistry is conducted on a similar plan, while that in Analytical Chemistry is based largely on practical work in the laboratory. For those students who may wish to specialize in Chemistry, there are two advanced subjects, and opportunity for advanced laboratory and research work in Chemistry is also provided.

SUBJECTS.

1. — General Chemistry. Lectures, recitations, and laboratory work. *Monday at* 2; *laboratory, Wednesday and Friday from* 2 *to* 4. MR. DURKEE.

2. — Qualitative Analysis; Basic and Acid Analysis; Analysis of Salts and Natural Products. *Laboratory, Tuesday and Thursday from* 2 *to* 5. MR. DURKEE.

3. — Quantitative Analysis; Gravimetric and Volumetric Analysis; Analysis of Ores. *Laboratory, Tuesday and Thursday from* 2 *to* 5. DR. CLARK.

4. — Quantitative Analysis (advanced course); Analysis of Water, Food Products, etc. *Laboratory, Tuesday and Thursday from* 2 *to* 5. DR. CLARK.

5. — Metallurgy and Assaying. Lectures, recitations, and laboratory work. MR. DURKEE.

6. — Organic Chemistry. Lectures, recitations, and laboratory work. (*Second half-year*). DR. BUCHER.

7. — Theoretical and Inorganic Chemistry (advanced course). Open to students who have taken 1, 2, and 3. *Three hours a week* (*first half-year*). PROFESSOR MICHAEL.

8. — Organic Chemistry (advanced work). Open to students who have taken 1, 2, and 3. *Three hours a week* (*second half-year*). PROFESSOR MICHAEL.

9. — Laboratory work in advanced Inorganic and Organic Chemistry. *Hours to be arranged by the instructor.* PROFESSOR MICHAEL.

10. — Original investigations in Chemistry. *Hours to be arranged by the instructor.* PROFESSOR MICHAEL.

## BIOLOGY.

PROFESSOR KINGSLEY.

The work in Biology begins with the general study of the structure and physiology of selected types of animals and plants. This subject is required of all students electing work

in the biological department. After this subject, work is outlined for the students according to their need and desires. Botany and Zoölogy are taught as continuations of the course in General Biology, while the work in Physiology, Histology, and Embryology is intended as preparatory to a medical education. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems. The equipment of the department is good, including microscopes, microtomes, reagents, preparations for the microscope, diagrams, at well as abundant material for illustration and dissection. There is also a department library of 800 volumes and over 1,200 pamphlets, while the College Library contains the proceedings of many learned societies both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to abundant library facilities.

SUBJECTS.

1. — General Biology. *Lectures, Tuesday and Thursday at* 11.45; *laboratory, Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is required of all students taking Biology for their prescribed work in science, and is introductory to all other subjects in Biology.

2. — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

This subject is offered as a collateral and elective only. Subjects 1 and 2 will not be accepted as work for advanced degrees.

3. — Comparative Anatomy of Animals; a continuation of the animal dissection of Biology 1. Six hours of Laboratory work. *Monday, Wednesday, and Friday from* 2 *to* 4 (*first half-year*).

PROFESSOR KINGSLEY.

4. — Botany; a continuation of the study of plants of Biology 1. Six hours of laboratory work. *Monday, Wednesday, and Friday from* 2 *to* 4 (*second half-year*). PROFESSOR KINGSLEY.

5. — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*

PROFESSOR KINGSLEY.

6. — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

7. — The History of Zoölogy. One lecture a week for the first half-year. PROFESSOR KINGSLEY.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

8. — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

9. — General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Tuesday, Thursday, and Saturday at* 8.45 (*second half-year*).

PROFESSOR KINGSLEY.

## GEOLOGY.

PROFESSOR MARSHALL.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals, systematically arranged in wall-cases, is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and

rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ*.

SUBJECTS.

1. — Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

2. — Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

1. — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year.*) PROFESSOR DOLBEAR.

## DRAWING.

PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of

work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used.

SUBJECTS.

1. — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week (second half-year).*

PROFESSOR ANTHONY, MR. DANIELS.

2. — Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.*

PROFESSOR ANTHONY, MR. DANIELS.

3. — Machine Drawing; Gearing, Elements of Design. *Two hours a week for the year.*

PROFESSOR ANTHONY.

4. — Freehand drawing. *Two hours a week (first half-year).*

MR. DANIELS.

5. — Topographical Drawing, with Field Work, Chain, Compass, Level, and Transit. *Three hours a week for the year.*

MR. DANIELS.

## ENGINEERING.

PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

SUBJECTS.

1. — Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week (first half-year).*
MR. DANIELS.

2. — Topography. Lectures, recitations, drawing, and field practice. *Two hours a week (first half-year).* MR. DANIELS.

This subject must be preceded by 1.

3. — City and Mining Surveying. Recitations, field and office work. *Three hours a week (second half-year).* MR. DANIELS.

4. — Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week (first half-year).* MR. DANIELS.

Subjects 3 and 4 must be preceded by 1 and 2.

5. — Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week (first half-year).*
MR. SANBORN.

6. — Thermo-dynamics. *Three hours a week (second half-year).*
MR. SANBORN.

7. — Applied Mechanics. *Three hours a week (second and first half-years).* PROFESSOR BRAY.

Subjects 6 and 7 must be preceded by Calculus.

8. — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Five hours a week (first half-year); three hours a week (second half-year).*
PROFESSOR BRAY.

This must be preceded by Mechanical Drawing and Engineering 5, 6, and 7.

9. — Roads and Railroads, to be taken with 4. *Three hours a week (first half-year); two hours a week (second half-year).* PROFESSOR BRAY.

10. — Hydraulics. *Three hours a week (second half-year).*
PROFESSOR BRAY.

11. — Bridges and Roofs. *Two hours a week (second half-year).*
MR. DANIELS.

12. — Masonry Construction. *Three hours a week (second half-year).*
PROFESSOR BRAY.

Subjects 10, 11, and 12, must be preceded by 7.

13. — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in

Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## PHYSICAL TRAINING.

MR. DURKEE.

Regular exercise in the gymnasium is required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Program Groups.

The arrangement of recitation hours of such subjects as have fixed hours assigned them, is shown in the subjoined table. Hours for laboratory work and for advanced subjects, not given in the table, are subject to arrangement with the instructor. No student is allowed to take more than one subject in any of these groups, except in the case of half-subjects that are not given in the same half-year. Such subjects are indicated by the small roman numerals (i) or (ii) following the name of the subject and showing the half-year in which it is given. The days of the week are indicated by the abbreviations M., Tu., W., Th., F., and S.

(M. W. F. at 8.45.)
French 3.
French 4.
History 5.
Mathematics 7 (ii).

(M. W. F. at 9.45.)
English Lit. 4 (ii).
English Lit. 5 or 6 (i).
German 3.
Mathematics 1.
Physics 3.

(M. W. F. at 10.45.)
English 2 (i).
English 3 (ii).
English Lit. 3 (i).
English Lit. 7 (ii).
German 6.
Latin 5 (W. F.).
History 2 (i).
History 4 (ii).
Mathematics 6 (ii).
Physics 1.

(M. W. F. at 11.45.)
English 6 (i).
English 7 (ii).
German 5.
Latin 2.
Greek 1.
Mathematics 3 (i).
Mathematics 4 (ii).

(M. W. F. at 2.)
Oratory 2 *a* (F.).
Greek 2.
Greek 6.
Philosophy 7.
Chemistry 1 (lect. M. lab. W. F.).
Biology 3, 4, 5, 6, 8 (lab.).

(M. W. F. at 3.)
English Lit. 1 or 3 (i).
English Lit. 2 (ii).
French 5.
Philosophy 8.
Chemistry 1 (lab. W. F.).
Biology 3, 4, 5, 6, 8 (lab.).

(M. W. F. at 4.)
Greek 8, 9 or 10 (W. F.).
Physical Training (Nov. 15 to March 15).

(Tu. Th. S. at 8.45.)
English 4 (i) (Tu. Th.).
Oratory 1 *a* (Tu.).
German 2.
French 2.
Latin 4.
Greek 7.
Political Science 1.
Mathematics 5 (ii) (i).
Biology 2 (i).
Biology 9 (ii).

(Tu. Th. S. at 9.45.)
German 1.
French 1.
Latin 3.
Greek 1.
Greek 5.
Political Science 2 (i).
Political Science 3 (ii).
Geology 1 (i).
Geology 2 (ii).

(Tu. Th. S. at 10.45.)
Italian.
Latin 1.
Philosophy 3 (ii).
Philosophy 4 (i).
Philosophy 5 (i).
Philosophy 6 (ii).
History 1.
Physics 2.

(Tu. Th. S. at 11.45.)
Oratory 1 *b* (S.).
German 4.
Greek 3 or 4.
Philosophy 1 (i).
Philosophy 2 (ii).
History 8 (i).
Mathematics 2 (ii).
Astronomy.
Biology 1 (lect. Tu. Th.).

(Tu. Th. at 2.)
English 1 (Tu.).
Oratory 2 *b* (Tu.).
Physics 7 (i).
Physics 8 (ii).
Chemistry 2, 3, 4 (lab.).
Biology 1 (lab.).

(Tu. Th. at 3.)
Hebrew 1 or 2.
Chemistry 2, 3, 4 (lab.).
Biology 1 (lab.).

(Tu. Th. at 4.)
Latin 6 or 7.
Chemistry 2, 3, 4 (lab.).

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years.

The course in Electrical Engineering leads to the degree of Bachelor of Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The degrees of Bachelor of Civil Engineering and Bachelor of Mechanical Engineering are given on the same conditions to students who have pursued the courses in Civil and Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the Courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

Modern Languages. —An elementary knowledge of French or German is required (see pages 29 and 31) of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject

is to be met by extra work. The courses in French and German are, in general, similar to those described on pages 45 to 47 (general statement).

Students in the three branches of Engineering follow the same plan of work for the first two years.

### FRESHMAN YEAR.

#### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plain Trigonometry. *Six hours a week.* MR. MYRICK.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Lettering, Model Drawing, Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY AND MR. DANIELS.

**Shop Work.** — Woodwork; Carpentry; Turning; Pattern-Making. *Two hours a week.*

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

#### Second Term.

**Mathematics.** — Spherical Trigonometry. *Three hours a week.* MR. MYRICK.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Two hours a week.* PROFESSOR HOOPER.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY AND MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.*

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

### SOPHOMORE YEAR.

#### First Term.

**Mathematics.** — Analytic Geometry. *Two hours a week.* MR. WREN.

**Drawing.** — Machine Drawing; Elements of Mechanism. *Three hours a week.* PROFESSOR ANTHONY and MR. SANBORN.

* See remarks on Modern Languages, page 69.

**Shop Work.** — Pattern Making. *One hour a week.*

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Four hours a week.* MR. DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

**Second Term.**

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. SANBORN.

**Drawing.** — Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *Two hours a week.*

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. MYRICK.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.**

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department, leading to the degree of Bachelor of Electrical Engineering, is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on

* See remarks on Modern Languages, page 69.

the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

The electrical workshop possesses a fine outfit of machine tools, including planer, shaper, drill, universal milling machine, engine lathes, speed lathes, turret lathe, and grinder. Here is constructed by students much of the apparatus in daily use in the laboratory.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 104.)

The plan of work for the Junior and Senior years is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Advanced Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. MR. SANBORN.

**History.** — General History. A course of lectures aiming to set forth the working of the forces of civilization in the evolution of society and states. Theses by the students. *Tuesday, Thursday, and Saturday, at* 10.45 (*first half-year*). MR. START.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *Two hours a week.*

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* MR. MYRICK.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *Three hours a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 69.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. ——.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies

the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college; beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Advanced Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. MR. SANBORN.

**History.** — As in Electrical Engineering Course. MR. START.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *Two hours a week.* ——.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** *Three hours a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 69.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week,*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; Study of different Types. *Five hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. ——.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. ——.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department, leading to the degree of Bachelor of Civil Engineering, has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has

constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field-work, and drawing-room practice in plotting from field notes, calculating, laying out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the classroom of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requir-

ing, on the part of the student, the application of formulæ to cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department, page 104. The plan of the last two years of the course is as follows: —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Three hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. MR. SANBORN.

**History.** — As in Electrical Engineering Course. MR. START.

**French or German.** *Three hours a week.**

* See remarks on Modern Languages, page 69.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *Two hours a week.* ——.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.* MR. DANIELS.

**English Literature.** — *Three hours a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.* MR. DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Hydraulic Laboratory.** — Measuring Discharges through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. ——.

**Railroads.** — Economic Theory of Railroad Location. *Two hours a week.* PROFESSOR BRAY.

**Bridges and Roofs.** — Theory and Practice of Designing. *Two hours a week.* MR. DANIELS.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per Week. | Must be preceded by |
|---|---|---|---|
| | FIRST TERM. | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Freehand Drawing | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | Rhetoric | 3 | — |
| | | | — |
| | SECOND TERM. | | — |
| 7 | Mathematics | 3 | 1 |
| 8 | Mechanical Drawing | 3 | 2, 3 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | Rhetoric | 2 | 6 |
| 13 | Mechanics | 2 | 7* |

*May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | FIRST TERM. | | |
| 14 | Analytical Geometry | 2 | 7 |
| 15 | Elements of Mechanism | 1 | 8, 9 |
| 16 | Machine Drawing | 2 | 9 |
| 17 | Pattern Making | 1 | 10 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 8 |
| 20 | Chemistry, General | 2 | — |
| 21 | Chemistry, Laboratory | 2 | — |
| 22 | Surveying | 2 | — |
| | | | — |
| | SECOND TERM. | | — |
| 23 | Calculus | 3 | 14 |
| 24 | Drawing | 2 | 15, 16 |
| 25 | Forging | 2 | — |
| 26 | French or German | 3 | 18 |
| 27 | Rhetoric | 3 | 12 |
| 28 | Physics, Lectures | 3 | 19 |
| 29 | Physics, Laboratory | 3 | 13, 19 |
| 30 | Metallurgy | | 20, 21 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 31 | Calculus | 3 | E. M. C. | 23 | — |
| 32 | Drawing, Machine | 2 | E. M. | 24 | — |
| 33 | Topography | 2 | C. | 22 | — |
| 34 | French or German | 3 | E. M. C. | 26 | — |
| 35 | Electricity, Recitations | 2 | E. M. C. | 7, 28, 29 | — |
| 36 | Electricity, Laboratory | 2 | E. M. C. | 7, 28, 29 | — |
| 37 | Steam Enginery | 3 | E. M. C. | 28 | — |
| 38 | History | 3 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | – | E. M. C. | 31 | — |
| 40 | Vise, and Machine Work | – | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 31 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | – | E. M. | 35, 36 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 28 | — |
| 45 | Physical Laboratory | – | E. M. C. | 35, 36 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 31, 37 | 39 |
| 47 | English Literature | 3 | E. M. C. | — | — |
| 48 | Masonry Construction | – | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 33 | — |

*E. — Electrical. M. — Mechanical. C. — Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing — Design | 2 | E. M. C. | 32, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | – | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | – | M. | 32, 37, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 59 | English Composition | 1 | E. M. C. | 27 | — |
| 60 | Surveying | 2 | C. | 33 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 31 | — |
| 62 | Drawing — Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | – | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | – | M. | — | 68 |
| 66 | Laboratory, Hydraulic | – | E. M. C. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 28 | — |
| 68 | Steam Engineering | – | M. | 55 | — |
| 69 | Railroads | 2 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 2 | C. | 52 | — |
| 71 | Thesis | – | E. M. C. | — | — |

* E. — Electrical. M. — Mechanical. C. — Civil.

# Buildings and Equipment.

## BUILDINGS.

The college buildings are: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, and Dean Hall; and Metcalf Hall, for women students. A new building, containing the commons dining hall, the post-office and rooms for students, was completed soon after the beginning of the present college year. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains thirty thousand eight hundred bound volumes, and about fifteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.30 A. M. to 12.45 P. M., and from 2 to 5 P. M. It is also open Monday and Thursday from 7 to 9.30 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering six hundred bound volumes and about one thousand pamphlets.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late P. T. Barnum, who also gave the college a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has just been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During the present year a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, will be placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the Southern and Western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the

species in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratories are in the newly-erected wing. The laboratory for elementary work is equipped with all necessary facilities, while the laboratories (two in number) for advanced and research work have all the necessary appliances and reagents for investigation in the lines of Anatomy, Histology, and Embryology.

The department library of Natural History, recently established in the Barnum Museum, contains those publications which bear directly upon the work of the department. It already embraces over seven hundred volumes and twelve hundred pamphlets. Its future increase is in part provided for by the publications received in exchange for the "TUFTS COLLEGE STUDIES." Most of the series of periodicals are complete since 1870.

## GODDARD GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room, for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, and includes fourteen Sargent developing machines. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electronometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a metre in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a small alternator, a special 4,000-watt machine for experimental purposes, and a pair of 110-volt 1,500-watt machines for the Library three-wire installation, and for charging the storage battery. Three other machines are in process of construction, — one of 12 kilo-watts and 110 volts. Steam power is furnished by two Whittier tubular boilers.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the

large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting. Connected with the laboratories is a workshop containing several lathes, with an outfit of wood and metal working tools used in the construction and repair of apparatus. Most of the rough and some of the fine apparatus used in the dynamo-room and laboratories is manufactured in this room.

### CHEMICAL BUILDING.

The new building for the department of Chemistry contains laboratories for General Inorganic, Organic, Analytical and Metallurgical Chemistry, a large lecture room, library and weighing room, and the private laboratories of the Professor in charge. The rooms are provided with all the modern laboratory conveniences and are well equipped with apparatus and chemicals.

### BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson Building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The complete equipment will be in readiness for the coming year and will include a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting-rooms are in the third story and separated from the noise and vibration of the shops. Abundant and uniform light is provided by means of large skylights on the northerly side.

### METCALF HALL.

This building, for the accommodation of women students, is a gift to the College by Mr. Albert Metcalf, of Newton. It is built of buff brick and gray limestone, of simple and dignified architecture, and is equipped with every convenience. In the

basement is a gymnasium, with bath-rooms connected. The first floor contains the rooms of the Matron, a reception-room, cloak-room, reading-room, and dining-room. The second and third floors have pleasant rooms for students, with ample bath and toilet conveniences on each floor. In the wing is the kitchen on the first floor, and servants' rooms on the second. Every safeguard for health and against fire is provided.

# General Information.

## RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere. A Sunday school is maintained in connection with Sunday worship, and students are made welcome to classes studying the Bible and subjects bearing upon the conduct of life.

The Russell Lecture, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator.

## TUFTS COLLEGE STUDIES.

This publication has been established as a means of presenting to the world the results of original work done in the different departments of the college. The numbers, which will be issued as material is ready, will be distributed to educational institutions and learned societies. The college desires to establish regular exchanges of these Studies with all publishing institutions at home and abroad. Correspondence regarding such exchanges should be addressed to the Librarian of Tufts College.

Three numbers have been issued, containing the following

papers: "The Anterior Cranial Nerves of Pipa," by G. A. Arnold; "Ectodermic Origin of the Cartilages of the Head," by Julia B. Platt; "The Classification of the Arthropoda," by J. S. Kingsley; "Development of the Lungs of Spiders," by O. L. Simmons; "Development of the Wing in Sterna Wilsoni," by V. L. Leighton.

The editorial board of Tufts College Studies, for the year 1895, is made up of the President of the College, and Professors Graves, Knight, Dolbear, and Kingsley.

## ADMISSION AND REGISTRATION.

The first examinations for admission to the College of Letters are held on the three days immediately following the annual Commencement in June, and the second examinations on three successive days in September, the last being the opening day of the college year. The program of the examinations may be found in the College Calendar on pages 4 and 5. Entering students are required to register at the office of the Registrar before taking their examinations. Those entering on certificates must file the proper blanks (to be obtained of the Registrar of the College) at least one month before the opening of the college year. This is necessary for a thorough examination by the Faculty of the statements submitted, and any one who does not comply with the full requirements relating to certificates may be required to take the examinations as a condition of admission to the College.

Every student who has been a resident one year or more at the College is required to register at the office of the Registrar before noon of the opening day of the college year, and must then file, on blanks furnished for the purpose, two statements of his plan of study for the coming half-year, one to be kept on file by the Registrar, the other for the use of his major instructor. The following day will be devoted to whatever consultations with students instructors may appoint. No petitions concerning the courses of students in regular standing, except such as may be

made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty on the evening of this day.

Instructors will post their class lists before 8.45 o'clock on the morning of the third day, and all students will be expected to meet their program appointments on and after that day. No student will be recognized as a member of a class whose name does not appear in the instructor's list of that class.

The same regulations are in force at mid-year and apply to all students, the arrangements for the first three days of the second half-year being the same as those for the first three days of the first half-year.

Students entering Tufts College after pursuing study in any other college of equal rank are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. Every special student shall choose a major department, and shall make up his plan of study under the direction and subject to the approval of the major instructor.
2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.
3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.
4. A special student, on leaving College, shall be entitled to a certificate giving the per cent attained in each course pursued, and signed by the President and Registrar.

5. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

## TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of three days at Thanksgiving, two weeks at Christmas, and one week beginning on the Saturday before the first Thursday in April.

## EXPENSES.

The charge for instruction is *one hundred dollars* a year.

Students in the laboratories are charged for certain materials used and for breakage. A fee of *two dollars* a term, payable in advance, is required of all students taking laboratory work in Biology. The charge to engineering students is *twenty dollars* a year extra, and other students who take shop work are charged extra.

A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the college buildings, except Paige Hall. Any damage done by students to college property is charged in the term bills.

Beginning with the college year, 1894–95, every student who enters the College of Letters will be required to deposit with the Treasurer of the College either a bond with two satisfactory sureties for the sum of *one hundred and fifty dollars*, or the sum of *seventy-five dollars* in cash, which sum, with interest at the rate of four per cent yearly, will be returned when the student leaves the College, his term bills first being paid in full.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement.

Students board in commons at $3.75 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student. Students furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition . . . . . | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds . . . . . | 10.00 | 10.00 |
| Half room-rent . . . . . | 15.00 | 75.00 |
| Care of rooms . . . . . | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks), | 126.00 | 180.00 |
| Total . . . . . | $261.00 | $375.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships and other aids must be made to the Faculty on or before the first day of November; and if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

Besides the scholarships already established for students, a limited number of gratuities of fifty dollars each are offered, the number not to exceed the number of scholarships available in any given year.

Scholarships and gratuities are available for those students only whose term bills are fully paid within ten days after the opening of each college term or after such bills shall have become due. The bills of any student whose connection with the College ceases are due at that time. The term bills of members of the graduating class are payable on the Saturday preceding Commencement Day.

No scholarship or gratuity is available to any student who is not a resident of a college dormitory, unless excused in writing from such residence by the authority of the executive committee of the Board of Trustees.

The following scholarships, of one hundred dollars each, are awarded annually: —

THREE STATE SCHOLARSHIPS, — Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS, — Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS, — Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS, — Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP, — Founded by the late Charles Robinson, LL. D., of Newton.

THE PATTERSON SCHOLARSHIP, — Founded by A. J. Patterson, D.D., of Roxbury, in the name of A. J. and Jane L. Patterson. [The income of this scholarship is not at present available.]

THE WILLIAM OSCAR CORNELL SCHOLARSHIP, — Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP, — Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP, — Founded by Mrs. Laura A Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP, — Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP, — Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP, — Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP, — Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP, — Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP, — Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP, — Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP, — Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP, — Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP, — Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP, — Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP, — Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP, — Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP, — Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP, — Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP, — Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP, — Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE J. D. PEIRCE SCHOLARSHIP, — Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857, — Founded by Heman Allen Dearborn, for the benefit of women students.

Two scholarships of one hundred dollars each and one of fifty dollars, for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP, — Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

APPOINTMENTS. — The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES. — In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 2, of the seventeenth and eighteenth sections of Chapter XXXIV. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors

upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained grade A (at least eighty-seven per cent) in his major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In two years preceding graduation, —

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for Honors, — Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has

attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on pages 29 and 37.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 29 and 37 for the attainment of that degree.

THE DEGREE OF BACHELOR OF CIVIL ENGINEERING, or of BACHELOR OF ELECTRICAL ENGINEERING, or of BACHELOR OF MECHANICAL ENGINEERING, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Civil Engineering or of Electrical Engineering or of Mechanical Engineering, after a graduate course of one year in the Engineering department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 104.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.
FRANK P. GRAVES, A. M., PH. D.

## FELLOWS.

KENYON, FREDERICK COURTLAND, *Lincoln, Neb.*, *Dean Hall*, 1.
S. B. (Nebraska University), 1892. Instructor in Geology, Nebraska University, 1891-92.
*Biology. Olmstead Fellow in Natural History.*

LAMBERT, FRED. DAYTON, *Muscatine, Iowa*, *East Hall*, 8.
PH. B. 1894. *Biology. Miner Fellow in Natural History.*

## STUDENTS.

BROWN, HENRIETTA NOBLE . . *Tufts College* . 38 Professors Row.
A. B. 1893. (*Assistant in Chemistry.*) *Biology and Chemistry.*

MORRISON, ADELBERT HARLAND, *Lawrence.* . . . . . A T House.
B. E. E. 1894. *Electricity.*

PROUTY, WILLIS JAMES . . . *Meriden, Conn.*,
A. B., 1887. *Latin.*

WEBSTER, FRED HENRY . . . *Haverhill.* . . . . East Hall, 29.
A. B., 1894. (*Assistant in Chemistry.*) *Chemistry.*

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are: —

| | |
|---|---|
| English Literature. | History. |
| Modern Languages. | Mathematics. |
| Latin. | Chemistry. |
| Greek. | Biology. |
| Electricity. | |

The degree of Doctor of Philosophy is offered in Classical Philology, Chemistry, and Biology.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

## DEGREES.

The Degree of Master of Arts will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions: —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one, or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of professional study will be assumed, upon which a thesis shall be presented.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF MASTER OF ARTS may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS.*

**English Literature.** — Candidates for the degree of Master of Arts must have taken subjects 1 to 5 with either 6, 8, 9, or one topic of 7. Subject 6, if not previously taken, may be pursued as a graduate subject, but the advanced student will be expected to make an exhaustive study of one or more selected authors. Subject 7 may be counted as graduate work, in such topics as have not previously been taken, provided that the student shall do work surpassing in quantity and quality that required of undergraduate students. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results obtained in some special line of investigation in literary history or criticism.

**Modern Languages.** — The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts who specializes in this department to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 44 to 47.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 40 to 68.

**Latin.** — Candidates for the degree of Master of Arts in Latin must have passed Latin 1, 2, and 3. Subjects 4, 6, 7, and 8 may be taken by graduate students, and additional advanced work will be laid out by the instructor. In Latin 4 graduate students will be expected to do work surpassing in quantity and quality that done by undergraduate students. Latin 6, 7, and 8 are primarily graduate subjects. The required thesis must embody the result of special investigation of some author or period, or of some philological problem.

**Greek.** — Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3, or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates, or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.** — Every graduate student must have taken History 1, 2, and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on page 54, 10 is for graduates only, while 5 and 9 will be accepted as parts of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.** — Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this

department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. Graduate students in Mathematics 2, 3, 4, 5, 6, and 7 will be required to do more advanced work in these subjects, to receive the degree of Master of Arts in Mathematics, than is required of undergraduate students.

**Chemistry.** — Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 6, or their equivalents. The advanced subjects 4, 5, 7, 8, and 9 are offered, and satisfactory work must be done in at least three of these subjects. The candidate must present an acceptable thesis in one of the subjects, and pass satisfactory examinations in all of the subjects studied.

**Biology.** — Candidates for the degree of Master of Arts in Biology must have already done work equivalent to Biology 1; or lacking that, they must take that course in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.** — The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Classical Philology.** — Candidates for the degree of Doctor of Philosophy must be able to read Greek and Latin readily at sight, and to use French and German authorities when necessary. They must have completed three years of advanced work, two of them, at least, in residence. The work will include Latin 6, 7, and 8, and Greek 8, 9, and 10. Regular work

antecedent to these subjects or its equivalent must have been previously accomplished. Candidates must, in the end, pass an examination on the work of the three years, and present a satisfactory thesis on some subject of original research in Classical Philology.

**Chemistry.** — Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1, 2, 3, and 6, or equivalent work. Unless previously qualified, they must take subjects 4, 7, 8, and 9 and devote at least one year to subject 10. Examinations in the above subjects must be satisfactorily passed and a thesis embodying an original investigation in Chemistry must be presented.

A well equipped laboratory is open to graduate students who may wish to pursue special lines of research work, and the department is prepared to offer every encouragement of original investigations.

**Biology.** — Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station. They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY. — In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known

respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History subjects upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 95 applies to all students of the College, graduate as well as undergraduate.

# Calendar of the Divinity School.

1894.

SEPT. 19. Examination for Admission, in Miner Theological Hall, beginning at 9 A. M.
SEPT. 20. School Year begins, Thursday morning.
SEPT. 23. Russell Lecture.
DEC. 19. Christmas Recess begins, Wednesday evening.

1895.

JAN. 2. Christmas Recess ends, Wednesday evening.
MARCH 30. Spring Recess begins, Saturday evening.
APRIL 7. Spring Recess ends, Sunday evening.
JUNE 4. Prize Reading. Greenwood Prizes.
JUNE 14. Class Day.
JUNE 16. Baccalaureate Sermon.
JUNE 19. Commencement.

SUMMER VACATION, THIRTEEN WEEKS.

SEPT. 18. Examination for Admission, in Miner Theological Hall, beginning at 9 A. M.
SEPT. 19. School Year begins, Thursday morning.
SEPT. 22. Russell Lecture.
DEC. 18. Christmas Recess begins, Wednesday evening.

1896.

JAN. 1. Christmas Recess ends, Wednesday evening.

# Faculty of the Divinity School.

ELMER H. CAPEN, D. D., *President.*
*In charge of Political Economy.*

CHARLES H. LEONARD, D. D., *Dean.*
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D. D.
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A. M., B. D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D. D., *Secretary.*
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A. M., B. D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A. M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A. B., B. D.
*Woodbridge Professor of Applied Christianity.*

ANSON B. CURTIS, PH. D.
*Professor of Hebrew.*

## NON-RESIDENT LECTURERS.

JOHN COLEMAN ADAMS, D. D.
*Lecturer on Some Conditions of Effective Preaching.*

F. W. HAMILTON, A. M.
*Lecturer on Christian Economics.*

JOSEPH K. MASON, D. D.
*Lecturer on Preachers and Preaching.*

# Students.

## Senior Class.

| | | |
|---|---|---|
| Blair, Arthur Adolphus | *Manchester, N. H.,* | Paige Hall, 13. |
| Cardall, Alfred James | *Bay City, Mich.* | Paige Hall, 24. |
| Cobb, Joseph Fernald, A. B., | *Deering, Me.* | Paige Hall, 7. |
| Roscoe, Tom, M. D. (Vt. Med. Coll.) | *Somerville* | 178 Central St. |
| Smith, Ashley Auburn | *Auburn, Me.* | Paige Hall, 1. |
| Tillinghast, James Dannals, | *Buffalo, N. Y.* | Heth Aleph Res House. |
| Wells, Charles Henry | *Barre, Vt.* | Paige Hall, 31. |

## Middle Class.

| | | |
|---|---|---|
| Blackford, Frank, B. S., (Nat. Norm. Univ.) | *El Dorado, O.* | Paige Hall, 18. |
| Dickerson, Jesse Clifford | *Detroit, Mich.* | Paige Hall, 6. |
| Eddy, Frank Fay | *Charlotte, Mich.* | Paige Hall, 30. |
| Ferguson, Frank Alvah, A. B., (Bost. Univ.) | *Somerville* | 316 Beacon St. |
| Fischer, Theodore Adolph | *Meriden, Conn.* | Paige Hall, 19. |
| Taylor, Henry Butterfield | *Buffalo, N. Y.* | Absent. |
| Ward, Charles Merrill | *Brattleboro, Vt.* | Heth Aleph Res House. |
| Wilson, John Harner | *Philadelphia, Pa.* | Paige Hall, 5. |

## Junior Class.

| | | |
|---|---|---|
| Bartlett, Alden Eugene | *Newtonville* | Paige Hall, 15. |
| Benton, Herbert Elmon, A.B., | *Annisquam* | Paige Hall, 12. |
| Bissell, Flint Mandrin | *Wellesley* | Paige Hall, 23. |
| Earle, Augusta Gertrude | *Somerville* | 8 Franklin St. |
| Ellis, John | *Lowell* | Paige Hall, 17. |
| Fortier, George Ferdinand | *Somerville* | Paige Hall, 2. |
| Jones, Clifford Ernest | *Cleveland, O.* | Paige Hall, 10. |
| Leavitt, Fenwick Lasselle | *Auburn, Me.* | Paige Hall, 25. |
| Macduff, Isabella Stirling | *Claremont, N. H.,* | 2 Emery St. |
| Powers, Mariette | *Newry, Me.* | Metcalf Hall, 9. |
| Robbins, Clarence Guy | *Melrose* | Paige Hall, 9. |
| Small, Willard Stanton, A.B., | *Provincetown* | Paige Hall, 36. |
| Smith, Nancy Wiley Paine | *Tufts College* | Morton Ave. |
| Thompson, George Linnæus, | *Stafford, Conn.* | Paige Hall, 29. |
| Walker, Fred Storer, A. B. | *Portland, Me.* | Paige Hall, 8. |

### Sub-Junior Class.

| | | |
|---|---|---|
| Amies, Olive Josephine | *Philadelphia, Pa.*, | Metcalf Hall, 16. |
| Ball, Dwight Ambrose | *Bellows Falls, Vt.*, | Paige Hall, 22. |
| Barney, Edward Mitchell | *Lynn* | Paige Hall, 20. |
| Bennett, George Arthur | *Westbrook, Me.* | Paige Hall, 28. |
| Boivin, Bertram D. | *Hinsdale, N. H.* | Paige Hall, 3. |
| Milton, Lucy Almira | *Waverley* | Mr. DeCelles's. |
| Rouillard, Harry Enoch | *Hinsdale, N. H.* | Paige Hall, 27. |

### Special Students.

| | | |
|---|---|---|
| Butler, Thomas | *Philadelphia, Pa.*, | Paige Hall, 32. |
| Dickins, Curtis Hoyt | *Portsmouth, N. H.*, | Absent. |
| Faunce, William Henry | *Campello* | Paige Hall, 34. |
| Kenyon, John Humphrey Plummer | *Hope, Me.* | 156 Boston Ave. |
| Selman, Marcia Martin | *Marblehead* | 90 Curtis St. |
| Tillinghast, Anna B. Moulton, | *Tufts College* | Heth Aleph Res House. |

### SUMMARY.

| | |
|---|---|
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| Middle Class | 8 |
| Junior Class | 15 |
| Sub-Junior Class | 7 |
| Special Students | 6 |
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# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. They are also required to pass a satisfactory examination in Greek, Roman, English, and American History; in English Grammar and Composition; in Rhetoric; and in English Literature.

Others whose age or circumstances forbid so extensive preparation, are admitted to the privileges of the school, to take

such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian Ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

**Alternative.** — Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

ENGLISH GRAMMAR AND COMPOSITION. — Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them subjects will be assigned at the time of examination.

For 1895. — Shakespeare's Merchant of Venice, and Twelfth Night; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; the Sir Roger de Coverley Papers in the Spectator; Macaulay's Essays on Milton and Addison; Webster's First Bunker Hill Oration; Irving's Sketch Book; Scott's Abbot.

For 1896. — Shakespeare's Merchant of Venice, and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Defoe's History of the Plague in London; Scott's Woodstock; Webster's First Bunker Hill Oration; Irving's Tales of a Traveller; George Eliot's Silas Marner.

For 1897. — Shakespeare's As You Like It, and Merchant of Venice; Defoe's History of the Plague in London; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

Applicants from other Theological Institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem*.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week for the first term.* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week for the second term.* PROFESSOR TOUSEY.

**Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes. *Three hours a week for one third of the year.* PROFESSOR LEONARD.

**Old Testament.** — Hebrew History. *Four hours a week.* — * Hebrew Language (optional). *Two hours a week.* PROFESSOR CURTIS.

**Oratory.** — Practical Exercises in the reading of Scripture and Hymns. *Two hours a week for the second term.* PROFESSOR MAULSBY.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week for the first term.* PROFESSOR TOUSEY.

**Old Testament.** — * Old Testament Theology. *Two hours a week.* — Advanced Hebrew Language Studies (optional). *Two hours a week.* PROFESSOR CURTIS.

**New Testament.** — Introduction to the Gospels; Textual Criticism; Hermeneutics; Life of Jesus, from the Greek of the four Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week.* PROFESSOR KNIGHT.

***Applied Christianity.** — A study of the facts in Christian history with reference to the influence of Christianity upon individual and social life. PROFESSOR WOODBRIDGE.

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* Omitted this year.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Two hours a week for two thirds of the year.*

PROFESSOR LEONARD.

**Oratory.** — Practice in the reading of Scripture, Hymns, and Sermon-literature. *Two hours a week for the first term.*

PROFESSOR MAULSBY.

## MIDDLE CLASS.

**Old Testament.** — Old Testament Sociology. *Two hours a week.*

PROFESSOR CURTIS.

**New Testament.** — Introduction to Acts and the Epistles; Life of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.*

PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week for the year.*

PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week for the first term, and three for the second term.*

PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.*

PROFESSOR LEONARD.

***Applied Christianity.** — The Church as it exists to-day; its office in the present time; its existing forms of effort; its opportunities and instruments for successful service; actual work in missions and charities.

PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — New Testament Theology. The Teachings of Jesus; Their Several Interpretations in the different books of the New Testament. *Two hours a week for two thirds of the year.*

PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week for the first third of the year.*

PROFESSOR KNIGHT.

**Philosophy of Theism.** — Limits of the Intelligence; Theistic Arguments; Special Studies with reference to the Evidences of Final Causes in Nature; Anti-Theistic Theories. *Three hours a week.*

PROFESSOR TOUSEY.

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* Omitted this year.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week.*

PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*

PROFESSOR LEONARD.

* **Applied Christianity.** — The Pastor's Personal Qualifications and Duties; His Relations to a single Congregation, and to Society; Methods of Christian Work; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. PROFESSOR WOODBRIDGE.

**Pastoral Care.** — Personal Qualifications and Duties of the Pastor; the Administration of Religion in General; Organized Work in the Parish. *Three hours a week for two thirds of the year.*

PROFESSOR LEONARD.

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* Omitted this year.

# Departments of Instruction.

**Psychology.** — The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**Rhetoric.** — The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the

chapters which deal with the art of constructing discourse, and with the methods of applying the principles of rhetoric in actual literary work.

**Old Testament.** — I. HEBREW: The aim is a working knowledge of the language of the Old Testament. The first part of the year is devoted to the grammar and the vocabulary of the more common words, with the reading of easy prose. The second part of the year is occupied with exegetical and critical readings from the Pentateuch, with especial reference to modern theories.

II. ADVANCED HEBREW: This is a continuation of Course I. Selections from ancient, middle, and later Hebrew are read, and the various critical questions examined from the point of view of the changed vocabulary and the growing ethical and religious insight.

The courses in the Hebrew language are elective, and aim to supplement the work of the other courses, being at once more technical and more thorough, and leading naturally to independent study and research.

III. HEBREW HISTORY: The aim is to impart a knowledge of Israelitish history from its beginning to its close. The text-book is the revised version of the Old Testament; and each reading is followed by a lecture on the part read in explanation and elucidation of the text. So far as possible, books and parts of books are read in chronological order, and especial attention is paid to recent discoveries, Assyrian, Babylonian, Palestinian.

IV. OLD TESTAMENT THEOLOGY: The purpose is to systematize and emphasize the salient and permanent elements in Old Testament Religion. Some of the subjects treated are, The names and attributes of God, Creation, and Providence; Sin and Redemption; The Moral Life. Available treatises are used as texts, and lectures are given on the canon and text, and on disputed points as to the date and meaning of some of the more difficult books.

V. Old Testament Sociology: The effort is to give, by means of lectures, a view of the social development of man as illustrated in Hebrew History. The method is inductive and exegetical, while it seeks to do justice to the highest ideals of the Biblical authors. The main divisions of the study are, Social Beginnings, The Family, The State, Economics, and the influence upon these Subjects of the Biblical Religion and Morality.

Readings are assigned in the various histories and theologies of the Old Testament, and in the Commentaries.

**New Testament.** — In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and of the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the four Gospels being employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, and the course of facts in his life. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connection.

In the Middle Year the History of the Apostolic Church is pursued, the Book of Acts being used as the basis. This writ-

ing is first examined as a historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

In the Senior Year the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. Also he is constantly instructed and inspired by the story of the great and good who have made the Church what it is. And in general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its Relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In

the latter part of the year special study is made of the chief religious sects in the United States; and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.** — The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge,

Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Laou-tsze, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.** — Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.** — After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized,

and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures, and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science, and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.** — The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions, — the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present

state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems, — ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in Homiletics covers two thirds of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The aim in the first division of this study is, by means of historic science, to discover the influence

of Christianity on the life of the world. It therefore traces the origin of Christian institutions, organizations, and methods from early times to the present day, and exhibits the changes wrought by Christianity in the character of the individual, and in the customs of society in various lands. The whole effort is to see in what respect Christianity is a principle of ethical and spiritual life, and an active influence affecting beliefs, outward habits, national manners and laws.

II. The second part of this course is devoted to a study of the Christian Church as it exists in modern times, giving attention to the constitution, organization, government of the various sects, and also to methods of work in missions, in reforms, and charities as these are undertaken by Christians of to-day. This study is followed with a discussion of the visible opportunities for work proper to the Church and to Christians, and of the instrumentalities which the most successful working churches employ. The constant effort is to know the Christendom in which our lot is cast that the ministers of Christ may be better prepared to take up the duties which devolve upon them.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises towards the members of a single congregation, or towards others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church, — baptisms, confirmation, the Lord's Supper, marriage, and the burial of the dead. The prime object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II. and III.) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring cities, that they may study the methods of those who

are in living contact with want and suffering; engage in actual benevolent work under the direction of skilled workers, and make report of what they see and do for discussion in the class-room. This special work is meant to meet the demand for a closer contact between the church and the daily lives of the people, and for a more sympathetic interest in their social and industrial problems.

**Pastoral Theology.**—Historic basis is found for this particular study in the Apostolic Church, — its organization, polity, and methods of work, — and in the instituted life of modern churches, Prelatical, Presbyterian, Congregational; and results reached are considered with reference to the government and methods of the Universalist Church.

The course further provides for the discussion of the spiritual, mental, and social qualifications of the pastor; the study of the forms and conduct of public worship; the practical illustration of pastoral oversight and visitation, the methods of building and uniting a parish, and the theories of church-work in Sunday schools, missions, charities; the study of modern social and industrial problems; and lectures upon the official duties of the Christian minister.

From year to year the course in Pastoral Theology is supplemented with special lectures from clergymen who are engaged in the active work of the ministry.

**Oratory.** — The object of the instruction in the department of Oratory is to gain a natural as well as reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the class exercises consist of actual practice in reading selected hymns and portions of the Scriptures, with the preaching, in the advanced division, of parts of sermons. The work done is followed by criticism and suggestion from the instructor and the class. A special class offers opportunity for practice in extemporaneous speaking.

# General Information.

## RELIGIOUS EXERCISES.

Devotional services, conducted by the Professors and the Students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

## EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

## LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

## ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

## GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and vicinity. Elaborate courses of lectures on scientific, social,

and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

## GYMNASTICS.

At least two years' work in the Gymnasium is ordinarily required of all students. Provision is made for continuing such work according to individual needs.

## THE DEGREE OF MASTER OF ARTS.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts, who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

## BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the Dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room is reserved for any applicant, who does not appear within one week of the opening of the College year.

At present no provision is made for free dormitory accommodations for the women who enter the Divinity School. As a rule they find homes in families in the neighborhood. The expense for room and board in such families is from four to seven dollars a week. The latter price would probably include steam or furnace heat, and light. The women students in the Divinity School may also find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

No charge is made for tuition, rent of rooms, and use of furniture in Paige Hall, or for use of libraries. The necessary expenses for board, washing, steam heat, gas, care of room, and gymnasium charges do not exceed two hundred and twenty-five dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Treasurer of the College either a bond, with two satisfactory sureties, for the amount of fifty dollars, or he

may deposit the sum of twenty-five dollars in money, which sum shall bear interest at the rate of four per cent yearly, and shall be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS, ETC.

THE GREENWOOD SCHOLARSHIP. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

REV. W. S. PERKINS, D. D., of Meriden, Conn., provides for an annual prize of twenty-five dollars to encourage extemporaneous preaching.

THE DOCKSTADER SCHOLARSHIPS. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

# MEDICAL SCHOOL.

# Faculty of the Medical School.

ELMER H. CAPEN, D.D., PRESIDENT.

ALBERT NOTT, M.D., West Newton.
DEAN *and Professor of Physiology.*

CHARLES P. THAYER, M.D., 74 Boylston Street, Boston.
SECRETARY *and Professor of General, Descriptive and Surgical Anatomy.*

HENRY W. DUDLEY, M.D., Abington.
*Professor of Pathology.*

WILLIAM R. CHIPMAN, A.B., M.D., Chelsea.
*Professor of the Principles and Practice of Surgery and Operative Surgery.*

WALTER L. HALL, M.D., Medford.
*Professor of the Principles and Practice of Medicine.*

JOHN W. JOHNSON, M.D., 20 Worcester Street, Boston.
TREASURER *and Professor of Obstetrics.*

FRANK G. WHEATLEY, A.M., M.D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A.B., M.D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A.B., M.D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A.B., M.D., 585 Washington St., Dorchester.
*Professor of Medical Chemistry.*

CHARLES A. PITKIN, A.M., PH.D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A.B., M.D., 225 Marlboro Street, Boston.
*Clinical Professor of Pediatrics.*

JOHN A. TENNEY, M.D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

JOHN L. HILDRETH, A.B., M.D., 14 Garden Street, Cambridge.
*Professor of Clinical Medicine.*

HERBERT L. SMITH, A.M., M.D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

## OTHER INSTRUCTORS.

THOMAS M. DURELL, M. D., Somerville.
*Lecturer on Medical Jurisprudence.*

J. STERLING KINGSLEY, S. D., Tufts College.
*Lecturer on Histology.*

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene.*

WILLIAM A. WHITE, M. D., 150 Friend Street, Boston.
*Lecturer on Diseases of Children.*

GEORGE A. WEBSTER, M. D., 708 Tremont Street, Boston.
*Lecturer on Otology.*

FRED H. MORSE, M. D., Melrose.
*Lecturer on Electro-Therapeutics.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

WILLIAM P. DERBY, M. D., 421 Marlboro Street, Boston.
*Instructor in Gynæcology, and Assistant in Obstetrics.*

CHARLES G. CUMSTON, M. D., 826 Beacon Street, Brookline.
*Instructor in Gynæcology.*

FRED S. RADDIN, M. D., Chelsea.
*Assistant in Surgery.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Assistant in Medical Chemistry.*

CHARLES L. CUTLER, M. D., Marlboro.
*Assistant in Gynæcology.*

ALBERT E. ROGERS, M. D., 143 Washington Street, Dorchester.
*Assistant in Materia Medica.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

J. C. D. CLARK, M. D., 81 Bunker Hill Street, Charlestown.
*Assistant in the Theory and Practice of Medicine.*

GEORGE E. WHITEHILL, M. D., Everett.
*Prosector of Anatomy.*

## EXECUTIVE COMMITTEE OF THE MEDICAL FACULTY.

ALBERT NOTT, M. D. CHARLES P. THAYER, M. D.
HENRY W. DUDLEY, M. D. WILLIAM R. CHIPMAN, M. D.
WALTER L. HALL, M. D. JOHN W. JOHNSON, M. D.
FRANK G. WHEATLEY, M. D.

# Students.

## SENIOR CLASS.

| | |
|---|---|
| Bailey, William Howard | *Waltham.* |
| Bertram, William Henry, M. D. | *East Boston.* |
| Bonyman, Harry Evan | *Everett.* |
| Butterworth, Mary Frances | *Revere.* |
| Chandler, Frederick Emerson | *Dorchester.* |
| Davis, Bessie Delano, M. D. | *Cambridgeport.* |
| Dennis, Jane Louise | *Fall River.* |
| Dorr-Bryant, Anna Mary, M. D. | *Boston.* |
| Drew, Maria Emma, M. D. | *Atlantic.* |
| Fleet, William Ernest, M. D. | *Cambridgeport.* |
| Godfrey, Joseph Witter, M. D. | *Concord Junction.* |
| Hands, Anna Carville, M. D. | *North Cambridge.* |
| Hughes, Laura Ann Cleophas | *Boston.* |
| Kinney, Eunice Draper, M. D. | *Boston.* |
| Leavitt, George Albert | *West Medford.* |
| MacDonell, John, M. D. | *South Boston.* |
| Ordway, Charles Anthony | *Concord, N. H.* |
| Pedrick, Stephen Augustus | *Boston.* |
| Putnam, Charles Willis | *Peabody.* |
| Rabinovich, Helen, M. D. | *Russia.* |
| Reed, Asa Pingree | *South Bridgton, Me.* |
| Russell, William Henry, M. D. | *Ipswich.* |
| Scoboria, Peter Gilmore | *South Chelmsford.* |
| Tilton, Letitia Marie, M. D. | *Boston.* |
| Walker, William, M. D. | *Roxbury.* |

## MIDDLE CLASS.

| | |
|---|---|
| Avedisian, Avedis der | *Armenia.* |
| Barry, James Henry | *Charlestown.* |
| Bourn, Cora Etta | *Providence, R. I.* |
| Bowker, Jane Howorth | *Brookline.* |
| Brandon, Flora Sabina | *Boston.* |
| Brightman, Helen | *Acushnet.* |
| Brousseau, William Gilbert | *Boston.* |
| Cummings, William Sinnott | *West Stoughton.* |
| Foss, Clarence Winfield | *Roxbury.* |
| French, John Innes | *Woburn.* |

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|---|---|
| Gage, George Asahel | *Holyoke.* |
| Greene, William Henry | *Roxbury.* |
| Holmes, Harry Clinton | *Chelsea.* |
| Johnson, Henry Peyton | *Richmond, Va.* |
| Kelleher, Patrick Francis | *Cambridge.* |
| Leavitt, Edwin Alden | *Boston.* |
| Littig, Marq D. | *Davenport, Ia.* |
| McNamara, Eugene Thomas | *Camden, Me.* |
| Moir, Archibald Campbell Milton | *Cambridge.* |
| Morse, Frederick Otis | *East Boston.* |
| Patch, Annie Sophia Kenney | *Farmington, N. H.* |
| Pillsbury, Ernest Dean | *Somerville.* |
| Pond, Eleanor Dorcas, A. B. | *Medway.* |
| Rice, Walter Henry | *Waltham.* |
| Robinson, Fred Hilliard | *Somerville.* |
| Ryan, John Francis | *Brookline.* |
| Smith, Annie Manson, B. S. | *Bedford.* |
| Stevens, Sarah Elmina | *Roxbury.* |

## FRESHMAN CLASS.

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|---|---|
| Ayers, Seabury Rogers | *Roxbury.* |
| Bailey, Ernest Harry | *Northfield, Vt.* |
| Birmingham, Louis Howland | *Somerville.* |
| Brehaut, William Albert | *Summerside, P. E. I.* |
| Brooks, Simpson Pomeroy, A. B. | *Springfield.* |
| Bryant, Edward LeRoy | *Boston.* |
| Burgess, Charles James | *Lawrence.* |
| Cochrane, George William | *Franklin.* |
| Cota, Henry Joseph | *Boston.* |
| Djelalian, Hairabed S. | *Armenia.* |
| Ford, Michael Angelo | *Rockland.* |
| Frew, Angus Matthew | *Cambridge.* |
| Frost, Flora Eva | *Granby.* |
| Galpin, George Henry | *Somerville.* |
| Gilman, Charles Sleeper | *Lakeport, N. H.* |
| Goddard, Anthony Marvin | *Hyde Park, Vt.* |
| Hart, Francis Joseph | *Charlestown.* |
| Healey, John Aloysius | *East Boston.* |
| Hopkins, Bertrand Hiram | *West Medford.* |
| Howland, Edgar Joseph | *Somerville.* |
| Kavanagh, Edward, Jr. | *Ipswich.* |
| Mackintosh, Ernest Robert | *Jamaica Plain.* |
| Mahoney, Frank Augustus | *South Boston.* |
| Mann, Gordon | *Rockland.* |
| McGee, Fannie Maria | *Newton.* |

| | |
|---|---|
| Murphy, Jeremiah Edward | *Somerville.* |
| Peabody, Sophia Reed | *Lawrence.* |
| Pigott, Thomas Edmund | *Winthrop.* |
| Place, Ralph Waldo | *Roxbury.* |
| Powers, Kate Gertrude | *Brockton.* |
| Proctor, John Donald | *Keene, N. H.* |
| Ramsdell, Charles Joshua | *Bradford.* |
| Riley, Elizabeth Angela | *Chelsea.* |
| Sexton, James Henry, Jr. | *Malden.* |
| Shaw, Thomas Wignall | *Somerville.* |
| Shisler, William Henry | *Fort Erie, Ontario.* |
| Summers, Albert Henry | *Braintree.* |
| Stockwell, Albert Winfield | *Boston.* |
| Stowe, Irving Elmer | *Charlestown.* |
| Thompson, James Albert | *Charlestown.* |
| Webber, Sarah Southworth | *Boston.* |
| Whitehouse, Albert | *Boston.* |

# The Medical School.

The Tufts College Medical School was opened in October, 1893, the purpose being to provide a thorough course of instruction in medical science, with moderate charges, and open to both sexes on equal terms. The enrolment of students for the College year 1893–4 was eighty, and twenty-two were graduated with the degree of Doctor of Medicine at Commencement in June, 1894, eight of this number being women. For the present year the accommodations of the school have been greatly increased, the corps of instruction has been strengthened, and the clinical and other advantages have been improved, so that the school is prepared to offer every opportunity needed by the undergraduate in medicine, and in some directions for graduate and research work.

The School is located at 188 Boylston Street, in the city of Boston, directly opposite the Public Gardens, and within a few steps of Park Square, one of the great street-car centres of the city, making it convenient to all the hospitals, dispensaries and public buildings, and the railway stations.

Upon the first floor occupied by the College are the lecture hall, Faculty room, and the women's study and toilet rooms. The lecture hall is supplied with comfortable chairs upon a raised platform, giving the student an unobstructed view of the lecturer, and the illustrations of the subject upon which he is engaged. This room has an abundance of light, while the blackboards and charts add to the convenience of demonstration. The room for women students is large, comfortable, and well supplied with chairs, tables, and desks, and adjoining it is the women's toilet room.

Upon the next floor are the smaller lecture room, the bacteriological laboratory, the private room of the Professor of

Medical Chemistry, and the men's study room. The laboratory upon this floor is well adapted to the uses for which it was designed, being fitted with a firm stationary table, and with individual artificial lights of the most modern construction, thus enabling the student to use his microscope without dependence upon daylight. It is well-equipped with microscopes and all necessary appliances.

Upon the third floor are the general chemistry laboratory and dissecting room. The laboratory is fitted with individual lockers, which are furnished with the various re-agents and glassware used by the student, which are distributed to him from the private room of the Professor of Chemistry on the same floor. The dissecting room is well-lighted, and furnished with modern inclined tables, to which are attached receptacles for all refuse matter.

Students of the Medical School have access, for work in Histology and Embryology, to the admirable laboratories of the biological department of Tufts College, in the Barnum Museum at College Hill. A statement of the facilities of this department may be found in the General Catalogue of Tufts College.

The Medical School at present offers a course of three years, leading to the degree of Doctor of Medicine.

# Departments of Instruction.

## FRESHMAN YEAR.

### Anatomy.

PROFESSOR THAYER. *Three hours a week.*

The course in Anatomy consists of lectures and demonstrations, illustrated by plates, models, and dissections. Especial attention is devoted to Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy, who will assign the parts to students and give all necessary assistance and advice. Abundance of material is furnished students at cost.

### Physiology.

PROFESSOR NOTT. *Two hours a week.*

This branch is taught by means of didactic lectures, frequent quizzing, and, so far as practicable, demonstrations upon the lower animals. Cellular Physiology, holding as it does a high and important position, will be taught in its modern acceptation. Physiology, being naturally divided into several departments, will be considered in its relations to Anatomy, Chemistry, Histology, and Pathology. Especial attention will be given to the nervous system, digestion, absorption, secretion, the blood and

its circulation. The student can thus study the phenomena which the human body exhibits in every department of its vital operations.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject. The instruction is by lectures, recitations, and practical work by the students. Especial attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of such knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The carbon compounds are treated as fully as time allows, and it is intended to require a short course of laboratory work in connection with them. The aim is to impart such general knowledge of the subject as is necessary to the intelligent physician. At the same time any who may wish to pursue the study further than is required of every graduate, may do so by special arrangement. Facilities for a limited amount of Quantitative work will be furnished to those who desire.

### Histology and Embryology.

PROFESSOR KINGSLEY. *Two hours a week.*

These subjects are taught by lectures and demonstrations, and in the case of Histology by laboratory work upon the primary tissues and the minute anatomy of these organs, an autoptic knowledge of which is necessary for the clear comprehension of the more common pathological conditions. The course in Embryology is comparative, the endeavor being to throw light upon not only those points which are of value in Obstetrics, but to render more easy of comprehension the structure and arrangement of the various organs, cranial nerves, eye and ear, uro-genital system, and other subjects which not infre

quently cause the student no little perplexity. The laboratory of the department is well equipped with microscopes, microtomes, reagents, etc., as well as with slides, diagrams, and material for student work. In Embryology, facilities are afforded for research work for all who are prepared to carry on investigation, and graduate work will be outlined upon application to the instructor.

## MIDDLE YEAR.

### Medical Chemistry.

PROFESSOR AUSTIN. *Four hours a week.*

Owing to the increased facilities afforded by the management of the school, the scope of instruction in this subject has been largely increased this year, so that now there is offered, in addition to lectures and recitations, practical work in urinalysis, including careful investigation with the microscope, analysis of bile, gastric juice, saliva, blood, and drinking water. Quantitative analysis, in so far as it pertains to these subjects, is conducted by the students in the laboratory, and the results obtained are carefully filed for future reference. Photo-micrographs have been largely used as a means of familiarizing students with the appearances of microscopic objects. The latter half of the year is devoted to toxicology, and students are required to examine poisons, not only in their pure state but mixed with organic matter; to which has been added this year, the examination of various food stuffs which are commonly adulterated. At each examination a written analysis is required of a specimen of milk, urine, and a poison.

### Pathology.

PROFESSOR DUDLEY. *Two hours a week.*

Instruction in this department will consist of lectures, quizzes, and recitations. It will be the aim to impress upon the student the importance of a thorough knowledge of the cause, career, and termination of pathological processes, giving frequent illustrations by morbid specimens.

### Materia Medica and Therapeutics.

PROFESSOR WHEATLEY. *Three hours a week.*

Instruction in this department will consist of lectures, and recitations, three hours a week during the year. The therapeutical application of remedies will receive especial attention.

### Bacteriology.

DR. BROWN. *Five hours a week.*

The course in Bacteriology, under the supervision of the Instructor, consists of one didactic lecture weekly, and four hours in the laboratory, where the various methods of isolating and identifying the different species of micro-organisms by cultivation and staining are thoroughly taught, and opportunities for original research are given. The laboratory is supplied with the best Leitz's microscopes, recently imported from Germany, and is otherwise equipped for this study. Each member of the class will have a microscope for use while in the laboratory.

## SENIOR YEAR.

### Ophthalmology.

PROFESSOR TENNEY. *One hour a week.*

The instruction in this department will be of the most practical character, being designed to prepare the student to treat such diseases of the eye as will be met with in general practice. The lectures will be fully illustrated by drawings and apparatus, and everything set forth in the didactic lectures will, as far as is practicable, be again brought to the attention of the student at the Suffolk Dispensary, where clinical material is amply sufficient for the purpose.

### Legal Medicine.

DR. DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurisprudence, together with a thorough course in the making of medico-legal autopsies, with as many practical demonstrations as pos-

sible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery.

PROFESSOR CHIPMAN. *Three hours a week.*

Two lectures and one recitation will be given weekly during the first term. In the second term there will be two lectures each week by Professor Chipman, and one recitation and lecture given by the assistant, Dr. Raddin. A considerable portion of the surgical course is devoted to pathology, for the reason that if students do not become well grounded in it during their college course they are very unlikely to take it up after becoming occupied with the details of practice. The course in operative and minor surgery is very thorough, and includes all the usual operations. Material for the illustration of this course is abundant, and students are given opportunities to operate upon the cadaver. In the department of principles and practice of surgery, particular attention is paid to the subject of diagnosis, and all didactic teaching upon the various branches of surgery is abundantly illustrated in the clinical material furnished by the several hospitals and dispensaries of the city.

As in the past, it will be the aim to make the Surgical Clinics of the greatest value to the student. The subject of Antiseptic Surgery in all that pertains to the knowledge and direct application of the same will be fully illustrated and shown as far as practicable. Fractures and dislocations will be treated by a thorough course of lectures and illustrations. The various fractures and dislocations will be illustrated by a specially prepared skeleton. The employment of the various means for the reduction of dislocations and the preparation of splints and other surgical appliances will be taught in the lecture room.

### Obstetrics.

PROFESSOR JOHNSON. *Three hours a week.*

The instruction in Obstetrics will consist of lectures illustrated by plates and manikins, with recitations, three times a week.

Especial stress is put upon diagnosis, the mechanism of labor, and care during convalescence. So far as possible, the various operations will be demonstrated upon the cadaver. Cases of Obstetrics will be furnished students under the charge of the Professor and his assistant.

### Clinical Medicine.

PROFESSOR HILDRETH. *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Theory and Practice of Medicine.

PROFESSOR HALL. *Three hours a week.*

This course consists of two lectures each week by Professor Hall, with clinical illustrations, when necessary or expedient, covering the whole ground of general medicine, — comprising in all sixty lectures.

### Neurology.

PROFESSOR WEBBER. *Two hours a week.*

There will be two lectures each week, during the second term, upon diseases of the nervous system and mental diseases. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centres. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class,

and twice weekly sub-divisions of the class receive practical instruction at the Suffolk Dispensary from Instructors Cumston and Derby. Once each week a quiz is held by Assistant Cutler on the lectures of Dr. Cushing. Arrangements have been made, by which students who wish to continue their studies after graduation, may witness major operations in the hospital service of Dr. Cushing.

### Otology.

DR. WEBSTER. *One hour a week.*

Instruction in this department will comprise lectures and clinical demonstrations. The students will have opportunities for seeing cases both in the lecture room and at the hospitals. In addition to seeing disease they will have opportunity for becoming practically familiar with it by treating the patients themselves, under the supervision of the Instructor. The students will thus be prepared to recognize all forms of aural disease and to treat such as do not require a prolonged special training.

### Diseases of Children.

PROFESSOR WILLIAMS. }
DR. WHITE. } *Two hours a week.*

Instruction in this department will consist of lectures, clinical teaching, and clinical conferences, embracing the anatomy, hygiene and diseases of infancy and childhood. The clinical advantages offered to students in this department are very great, and the number of cases shown is large and varied.

### Electro-Therapeutics.

DR. MORSE. *One hour a week.*

In this department will be given a course of lectures involving a study of the properties and of the effects upon the system of the galvanic, the faradic, and the static currents. The rapid advances made within recent years in the application of electricity in surgery, gynæcology, and neurology, as well as in general diseases, make it play an important part in modern

diagnosis and therapeutics. The aim of the instruction will be to impart a knowledge of the subject based upon recent investigations and to point out the wide range of usefulness of this important remedial agent, at the same time keeping within conservative limits.

## CLINICAL ADVANTAGES.

Boston, as the largest city of New England, offers unusual clinical facilities to the student of Medicine. The amphitheatres of the Massachusetts General Hospital and the Boston City Hospital are open to the students, and clinics are held at the Boston Dispensary, where fifty thousand patients are annually treated.

In connection with this school, there has been established, at the North End, the Suffolk Dispensary, where several thousand patients are annually treated.

This Dispensary is under the sole control of the Faculty, who constitute its consulting staff, and Senior students are required to be in attendance, thus bringing them in direct contact with methods of diagnosis and treatment.

In the building is a comfortable room where students can remain while awaiting cases of Obstetrics, quite a number of which are always available.

## TEXT-BOOKS.

The first book mentioned is preferred as a Text-Book, the others being recommended as collateral reading.

**Anatomy**: Gray, Quain, Weisse, Holden.

**Physiology**: Landois and Sterling, Kirk's Hand-book, Martin's Human Body.

**General Chemistry**: Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Medical Chemistry**: Tyson on the Urine, Roberts on Renal and Urinary Diseases.

**Toxicology**: Reese on Medical Jurisprudence and Toxicology, Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics**: Bartholow (8th edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology**: Greene, Billroth, Ziegler.

**Bacteriology**: Woodhead, Sternberg.

**Obstetrics**: Lusk, Playfair, Cazeaux, Winckle.

**Gynæcology**: Diseases of Women by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery**: American Text-Book of Surgery, Treves, Ashurst, Wyeth.

**Clinical Medicine**: DaCosta's Medical Diagnosis, Tyson's Medical Diagnosis, American Text-Book of Theory and Practice.

**Neurology**: Gower, Dana, Gray.

**Mental Diseases**: Cloustin, Spitzka.

**Pediatrics**: Smith, Rotch.

**Ophthalmology**: De Schweinitz, Nettleship, Noyes.

**Medical Dictionary**: Dunglison.

## EXAMINATIONS.

The examinations are held in the College Building at the opening and close of the regular course of lectures, and are in writing. Those at the opening of the course in the Fall are for those commencing the study of medicine, and for students from other colleges who apply for advanced standing, and for those who fail in the Spring.

Examinations at the close of the course in the Spring are as follows: —

*Freshman Year:* Anatomy, including Histology, Physiology, including Hygiene, and General Chemistry.

*Middle Year:* Materia Medica and Therapeutics, Pathology, and Medical Chemistry and Toxicology.

*Senior Year:* Obstetrics, Gynæcology, Surgery, including Ophthalmology, Theory and Practice of Medicine, Clinical Medicine, Clinical Surgery, and two electives.

Senior students shall, before November first of each year, select two branches from the following electives, and pursue the study of the two branches as special studies.

Electives: Neurology, Pediatrics, Otology, Legal Medicine, and Electro-therapeutics.

The examination in Bacteriology takes place immediately at the close of the course in that study.

The examination in Obstetrics is optional to students of the Middle year.

Students are eligible for their examinations as follows: those of the Freshman year at the end of first year of attendance; those of the Middle year at the close of the second year's course, provided they have passed a majority of the Freshman examinations; those of the Senior year at the close of the third year's course, provided they have passed all of the Freshman examinations, and a majority of those of the Middle year.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than 200 words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic including decimal and vulgar fractions and percentages.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

**Exceptions.** — No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or state normal schools or of institutions of similar grade, nor of students holding teachers' certificates. To save delay students are requested to bring their diplomas and certificates with them.

### To the Middle Class.

Students of other accredited medical schools who have passed a majority of the examinations of the Freshman Year, which include Anatomy, Physiology, General Chemistry, Histology and Hygiene may be admitted to the Middle class.

Students of dental or pharmaceutical colleges whose standard of instruction is approved by the Faculty of this School, who have attended two full courses of lectures and passed the examinations of the Freshman year as above noted may be admitted to the Middle class.

### To the Senior Year.

Students of other accredited medical schools who have passed the examinations in Anatomy, Physiology, General Chemistry, Histology, and Hygiene, and a majority of the examinations of the Middle year, and graduates of accredited medical colleges, may be admitted to the Senior class.

Students must matriculate before November 1 of each year, in order to fulfil requirements of time.

## REQUIREMENTS FOR GRADUATION.

Candidates for the degree of Doctor of Medicine must fulfil the following requirements: —

They must be twenty-one years of age, and of good moral character.

They must have attended three full courses of medical lectures at some accredited medical college, the last of which at this school, and no two courses in the same year.

They must have passed all the required examinations.

They must have attended one case of obstetrics.

They must have dissected one half of the body.

# General Information.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the first Wednesday in October of each year, and continues until the first Wednesday in June.

The Christmas vacation (of a week) divides the course into two sessions.

There are no exercises at the school during this vacation, nor upon Thanksgiving Day, or Patriots' Day.

The course for 1895-96 will begin on Wednesday, October 2, 1895, and continue until Wednesday, June 6, 1896.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of each session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school.

## EXPENSES.

### First Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 90.00 |

**Second Year.**

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 90.00 |

**Third Year.**

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 90.00 |
| Graduation fee | 30.00 |
| Ticket admitting to the three years' lectures (when paid in advance) | 250.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, PROFESSOR CHARLES P. THAYER, M. D., 74 *Boylston Street*, *Boston*, *Mass.*

# The Suffolk Dispensary.

The Suffolk Dispensary is under the control of this school, is located at the North End where clinical material is abundant.

**President,**

HON. ALBERT C. SMITH.

**Vice-Presidents,**

HIS HONOR, NATHAN MATTHEWS, JR.
HON. THOMAS N. HART.

**Secretary,**

JOHN W. JOHNSON, M. D.

**Treasurer,**

CHARLES P. THAYER, M. D.

**Consulting Staff,**

THE MEDICAL FACULTY OF TUFTS COLLEGE.

**Attending Staff,**

E. E. THORPE, M. D.
G. F. EAMES, M. D.
W. P. DERBY, M. D.
F. W. SAWYER, M. D.
H. B. DUNHAM, M. D.
W. A. WHITE, M. D.
F. S. RADDIN, M. D.
T. F. GREENE, M. D.
C. G. CUMSTON, M. D.
C. D. EBANN, M. D.
WILLIAM WALKER, M. D.
G. A. WEBSTER, M. D.

BROMFIELD-PEARSON HIGH SCHOOL.

# Bromfield-Pearson High School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

GARDNER C. ANTHONY, A. M., DEAN,
*and Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.,
*Instructor in Drawing.*

FRANK G. WREN, A. B.,
*Instructor in Mathematics.*

CHARLES ST. CLAIR WADE, A. M.,
*Instructor in French.*

GEORGE H. FURBISH,
*Instructor in Woodwork and Foundry Work.*

———— ————,
*Teacher of Forging.*

## STUDENTS.

| | |
|---|---|
| Chapman, William W. | *Providence, R. I.* |
| Forster, William H. | *Erie, Penn.* |
| Hawes, Clifford | *Magnolia, Ill.* |
| Larkin, Frank P. | *Westerly, R. I.* |
| Massie, Walter W. | *Providence, R. I.* |
| Norris, Charles H. | *New Britain, Conn.* |
| Sweet, Morton S. | *North Uxbridge, Mass.* |

The instruction in drawing and shop-work is also given to all engineering students of Tufts College.

# Courses of Study.

Two courses are open to students of this school: a preparatory course of one year for such as may be qualified by previous education and maturity of mind to fit for any of the Engineering Courses of Tufts College in one year; and a special course in Engineering for those who may devote but two years to their studies, and desire the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES OF THE SCHOOL.

Students may prepare for the Engineering Department of the College in less time than by the ordinary fitting school, as it is possible to take all the mathematics of a high-school course in one year, beside the necessary preparation in language.

Students who pursue the preparatory course and complete the work satisfactorily will be admitted to the College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are in most respects identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two years' course and later decide to enter the College will receive full credit by the College for all work satisfactorily performed which may be equivalent to that required in the Engineering Department.

The association with college work and college men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in carpentry, moulding, pattern-making, forging, and machine work.

## SUMMARY OF COURSES.

### Preparatory.

Academic Algebra, Plane Geometry, Solid Geometry, French, English, Freehand Drawing, Mechanical Drawing. Trigonometry and Shop Work, *Elective*.

### Special Engineering.

**First Year.** — Academic Algebra, Plane Geometry, Solid Geometry, Descriptive Geometry, Trigonometry, Mechanics, English, Freehand Drawing, Mechanical Drawing. Shop Work, *Elective*.

**Second Year.** — Advanced Algebra, Spherical Geometry, Analytical Geometry, Calculus, Applied Mechanics, Steam, Kinematics, Machine Drawing and Design. Shop Work, Physics, and Chemistry, *Elective*.

## THE FIRST YEAR.

ALGEBRA is pursued during the first three quarters, and includes quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

GEOMETRY is begun during the first quarter and continued throughout the year. The course includes plane and solid geometry, omitting spherical.

PLANE TRIGONOMETRY is studied during the fourth quarter. This may be omitted by those preparing for College.

ELEMENTARY MECHANICS is pursued during the last half-year by the special engineering students.

ENGLISH GRAMMAR AND COMPOSITION is pursued throughout the year.

FRENCH for the entire year is required of those who are preparing for a College course. Special students may elect.

DRAWING (Freehand) is pursued for the first two quarters, but may be omitted by those fitting for College.

DRAWING (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in Freehand are identical with the College course in drawing, and all or a part may be omitted by students fitting for College.

DESCRIPTIVE GEOMETRY may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the third and fourth quarters, and is required of those taking the two years' course.

SHOP WORK is elective, and may be taken at any time when it does not interfere with required work.

## THE SECOND YEAR.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to such College classes as they may be fitted for.

ADVANCED ALGEBRA AND SPHERICAL GEOMETRY are pursued during the first two quarters with the College classes.

ANALYTICAL GEOMETRY is taken during the first two quarters.

CALCULUS (Differential and Integral) is studied during the third and fourth quarters. This course is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

APPLIED MECHANICS is pursued for one half-year, and the subjects assigned for design are such as to afford a practical application of the theory.

STEAM ENGINE. A brief course in the theory of steam precedes the study of boilers and engines, as presented in the problems for design. The application of the indicator and the study of diagrams is an important feature of this course.

DRAWING. At the beginning of the year the student is supposed to be familiar with elementary machine drawing, and more time is now taken to consider the technicalities of shop practice. To this end the work is conducted as it would be in the drafting room of a shop, the instructor becoming the chief draftsman.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same.

During the second year the student may elect either Physics or Chemistry. These subjects are to be pursued with the College classes, and will include the lectures, recitations, and laboratory work required in the Engineering department.

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from school previously attended, or by examination, oral or written, as may be deemed necessary.

In the matter of examination, either for entrance or for advanced standing, the students are considered individually rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## CERTIFICATES.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state what subjects have been completed according to the requirements of the institution. No diploma is given or degree conferred.

## TUITION.

Tuition is $30 per quarter, payable in advance, and no part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Full information concerning the courses and other matters pertaining to the school may be obtained on application to GARDNER C. ANTHONY, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

# Thirty-Eighth Annual Commencement.

JUNE 20, 1894.

## DEGREES CONFERRED.

### Honorary Degrees.

**Ph. D.**

ELIHU THOMPSON.

**D. D.**

WILLIAM ERASTUS GIBBS.
THOMAS ALLIN.

**LL. D.**

JARVIS SHERMAN WIGHT, M. D.

### Degrees in Course.

**A. B.**

HERBERT ELMON BENTON (*with Honors in German and History*).
JAMES STUART EASTWOOD.
FRED EUGENE GARDNER (*extra ordinem*).
BLANCHARD FOSSETT HICKS.
FRED CROSBY HODGDON (*with Honors in Mathematics*).
VIRGIL LOUIS LEIGHTON (*with Honors in Biology*).
WILLARD STANTON SMALL.
CHARLES JOSEPH SNOW (*with Honorable Mention in Greek*).
CHARLES CRAWFORD STROUD (*with Honorable Mention in History*).
CHARLES ST. CLAIR WADE (*with Honors in Greek and Latin*).
FRED STORER WALKER (*with Honorable Mention in English Literature*).
FRED HENRY WEBSTER (*with Honors in Biology*).
THOMAS WHITTEMORE.
FRANK GEORGE WREN (*with Honors in Mathematics*).

**Ph. B.**

FRED DAYTON LAMBERT (*with Honorable Mention in Biology*).

B. C. E.

ORVILLE JOPHANUS WHITNEY.

B. E. E.

EDWARD PATRICK BYRNE.
CARL VOLTAIRE HATHAWAY.
ISAAC BURRILL HERSEY.
JOHN OLIN McDAVITT.
JOHN PURINGTON MALLETT (*with Honorable Mention in Electricity*).
ADELBERT HARLAND MORRISON (*with Honorable Mention in Electricity*).
ROBERT HENRY MORSE.
FREDERICK HOWARD PEMBER (*with Honors in Electricity*).
RUFUS CURTIS READ.
SAMUEL ALBERT SPALDING.
ALBERT POTTER WILLS (*with Honors in Electricity*).
EDWIN HANSCOM WRIGHT (*with Honorable Mention in Electricity*).

B. D.

ALLEN BROWN.
AUGUSTINE NORWOOD FOSTER.
ARTHUR WILDER GROSE, A. B.
HERVEY HASTINGS HOYT.
GEORGE EDWARD LEIGHTON.
IRA DANIEL MORRISON.
FREDERIC WILLIAM PERKINS, A. B.
OMER GENERE PETRIE.

M. D.

LEGRAND BLAKE.
MAY CHADBOURNE.
JAMES COLBY DORR CLARKE.
ROSA FLETCHER.
HENRY BRISTOL DUNHAM.
CHARLES DELETANG EBANN.
EUDORA MEADE FAXON.
JEFF CUSHING GALLISON.
THOMAS FRANCIS GREENE.
GEORGE EDDY HUNT.
CHARLES DAVISON KNOWLTON.

JONATHAN HARDING MEIGS.
ALICE ELIZABETH PALMER.
RICHARD MILLS PEARCE.
HELEN RABINOVICH.
JAMES McDONALD ROY.
MARY EUPHRASIA SMITH.
ELLA GERTRUDE STONE.
EDWARD ELIPHALET THORPE.
WILLIAM WALKER.
WILLIAM ALLEN WHITE.
ELLA ROSALIND WYLIE.

A. M.

ARTHUR WILDER GROSE.
CHARLES AUGUSTUS HATHAWAY.
MINNIE ADELAIDE NICHOLS.
FREDERIC WILLIAM PERKINS.
CHARLES ROLLIN TUCKER.
CHARLES ST. CLAIR WADE.

E. E.

ROBERT CALTHROP BROWN.
ALBERT STETSON.

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## AWARDS OF PRIZES, 1893-94.

**Goddard Prize in Latin.**

MARY FRANCES GODDARD.

**Goddard Prize in Mathematics.**

WINTHROP WARNER WHITE.

**Greenwood Prize Scholarship in Oratory.**

HERBERT ELMON BENTON.

**Rhetorical Prizes.**

THOMAS WHITTEMORE and HERBERT ELMON BENTON, of the Senior Class; CHARLES DOW CLARK and EDWARD CHANNING CRAIG of the Junior Class; BLANCHE HARWOOD HILL and REIGNOLD KENT MARVIN of the Sophomore Class.

**Greenwood Prizes in Oratory in the Divinity School.**

CURTIS HOYT DICKINS, CHARLES MERRILL WARD, and TOM ROSCOE.

**Perkins Prizes for Extemporaneous Preaching in the Divinity School.**

FREDERICK WILLIAM PERKINS and IRA DANIEL MORRISON.

**Entrance Examination Prizes, 1894-95.**

MALCOLM CAMPBELL ANDERSON and WILLIAM RICHARD RANSOM.

# CATALOGUE

OF

# TUFTS COLLEGE

1895-6

# CATALOGUE

OF

# TUFTS COLLEGE

1895-96

BOSTON:
ALFRED MUDGE & SON, PRINTERS.
No. 24 FRANKLIN STREET.
1895.

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# Calendar.

## 1895.

| | | |
|---|---|---|
| SEPT. | 19. | College year begins (all departments except the Medical School), Thursday morning. |
| SEPT. | 22. | Russell Lecture, Sunday, 3 P. M. |
| OCT. | 1. | Examination for Admission to the Medical School. |
| OCT. | 2. | Medical School Year began. |
| NOV. | 4. | Fall Examinations of Medical School began. |
| DEC. | 18. | Christmas recess begins, Wednesday at 1 P. M. |

## 1896.

| | | |
|---|---|---|
| JAN. | 1. | Christmas recess ends, Wednesday evening. |
| FEB. | 8. | End of first half-year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 10. | Second half-year begins Monday. |
| MARCH | 28. | Spring recess begins, Saturday at 1 P. M. |
| APRIL | 5. | Spring recess ends, Sunday evening. |
| MAY | 26. | Prize Reading in the College of Letters, Tuesday. |
| JUNE | 2. | Prize Reading in the Divinity School, Tuesday. |
| JUNE | 12. | Class Day, Friday. |
| JUNE | 14. | Baccalaureate Sermon, Sunday, 3 P. M. |
| JUNE | 17. | Thirty-ninth Annual Commencement, Wednesday. |

*First Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| JUNE | 18. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M.<br>Physics, 4 to 5 P. M. |
| JUNE | 19. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M.<br>Chemistry, 4 to 5 P. M. |
| JUNE | 20. | Greek and Intermediate or Advanced German, 9 to 11 A. M.<br>Natural History (two subjects), 11 A. M. to 1 P. M. |

SUMMER VACATION, THIRTEEN WEEKS.

*Second Examinations for Admission to College of Letters.*

SEPT. 15. Algebra, 9 to 10.30 A. M.
English, 10.30 A. M. to 12.30 P. M.
Arithmetic and Plane Geometry, 2 to 4 P. M.

SEPT. 16. Latin and Advanced Mathematics, 9 to 11 A. M.
Elementary German and French, 11 A. M. to 12.30 P. M.
History, 2 to 4 P. M.

SEPT. 17. Greek and Intermediate or Advanced German, 9 to 11 A. M.
Natural History (two subjects), 11 A. M. to 1 P. M.
Physics, 2 to 3 P. M.
Chemistry, 3 to 4 P. M.

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SEPT. 16. Examination for Admission to the Divinity School in Miner Hall, beginning at 9 A. M.

SEPT. 17. College Year begins, Thursday morning.
Registration of all students at Secretary's office.
Major departments and plans of study for the first half-year must be reported before noon of this day.

SEPT. 19. Regular College exercises begin.

SEPT. 20. Russell Lecture, Sunday 3 P. M.

DEC. 23. Christmas recess begins, Wednesday evening.

## 1897.

JAN. 6. Christmas recess ends, Wednesday evening.

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TUFTS COLLEGE is situated at College Hill, four miles from Boston, on the Lowell division of the Boston & Maine Railroad. The post-office address is — TUFTS COLLEGE, MASS.

# Historical Sketch.

TUFTS COLLEGE was founded under a charter granted April 21, 1852. Like so many of the endowed colleges of the country, it owed its beginnings primarily to the need of an educated ministry, felt by an important body of Christians. Its work is, however, non-sectarian, a fact amply shown by the membership of its Faculty and student body. The aim of its instruction has been always the pursuit of truth.

The movement resulting in the founding of the college was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. William J. Walker came soon after, with

gifts and bequests amounting to nearly three hundred thousand dollars.

Students were first formally admitted in 1855. The only building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year.

In March, 1875, the Rev. Elmer Hewitt Capen, D. D., was elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June.

Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed

course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882 the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. Charles H. Leonard, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of Ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had a very rapid development, and in 1894 the field was broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting

it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, pattern-making, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

In 1883 the late Phineas T. Barnum gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw also the completion of the Goddard Chapel, a monument of architectural beauty, given by Mrs. Mary T. Goddard as a memorial of her husband, the first treasurer of the college, and of the Goddard Gymnasium, a gift from the same source. Dean Hall, a new dormitory, made necessary by the growth of the college, was erected in 1887 from funds bequeathed by the late Oliver Dean.

During the past college year two new buildings were opened in addition to the west wing of the Barnum Museum. These were the Chemical Building and a building containing students' rooms, a dining hall and the post-office.

The development of the college in its internal life has, however, been the notable fact of the last few years, of which the external changes have been the indications. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, with an entrance requirement, believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the college towards the broadening of its opportunities, but it soon proved to be insufficient. There had been a steady growth for many years in the amount of work done and in the number of departments of learning represented. Instead of the five members of the corps of instruction at the opening of the college in 1855,

the catalogue of 1893-4 showed a body of active instructors, exclusive of the Divinity and Medical Schools, numbering twenty-seven, and offering subjects aggregating 113 and divided into twenty-two departments, exclusive of the Engineering Courses proper. Two new departments had been instituted in 1892, in response to the tendencies of educational development — Biology and History. In the fall of 1893 it seemed possible to take another step and to put in operation the present plan of work, which is believed to be an approach to a rational coordination and connection of the college and university systems. The beneficial results, in the growth of a more earnest and scholarly spirit, have already been felt.

In this revision of requirements provision was made for admission of graduates of good English high schools to courses leading to the degree of Bachelor of Philosophy. This opportunity has been broadened this year by the opening of four-year courses in Biology, Chemistry, General Science, and Medical Preparatory work, these courses leading to the degree of Bachelor of Science, and being accessible to graduates of all good high schools. These new courses open broad opportunities to graduates of schools, not fitting especially for college, to secure a thorough college training. Bachelors of Philosophy may, if they desire, go on to the attainment of the degree of Bachelor of Arts.

In response to a pressing demand the college was, in the summer of 1892, opened to women on the same terms as to men. Nine women registered in all departments in that year. In 1894 the catalogue showed a registration of 72 women. In the fall of 1894 there was opened for the accommodation of women students Metcalf Hall, the gift of Mr. Albert Metcalf, of Newton. The admission of women to the college was followed a year later by the opening of the Tufts College Medical School. The school has graduated two classes and has enjoyed substantial growth in the number of its students and in its facilities for work.

# THE COLLEGE CHARTER.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time, to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the Trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all

actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

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1895-96

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WINSLOW, GUY MONROE . . *Barton Landing, Vt.* 105 Porter St., Somerville.
*A. B.* 1895. *Biology.* *Olmstead Fellow in Natural History.*

### Students.

Edwards, John Williams . . *Delaware, O.* . . . . West Hall, 20.
*B.S., Ohio Wesleyan Univ.*, 1895. *Chemistry.* *Assistant in General Chemistry.*

Higbee, Florence E. Johnson, *Wooster, O.* . . . . . Cor. Capen St.
*Ph. B., Wooster Univ.*, 1887. *Chemistry.* and Bellevue Ave.

Leighton, Virgil Louis . . . *West Falmouth, Me.* . Dean Hall, 9.
*A. B., Tufts*, 1894; *A. M., University of Kansas*, 1895.
*Chemistry.* *Assistant in Qualitative Analysis and Assaying.*

Smith, Orren Henry . . . *Williamstown, Vt.* . . West Hall, 12.
*English Literature.*

Whitehorne, William Risby . *W. Somerville* . . . 14 Elmwood St.
*A. B.*, 1895. *Chemistry.*

## COURSES IN ARTS AND SCIENCES.

In the following list the course pursued by each student is indicated by the italic letters immediately following the name. The abbreviations are as follows: Courses leading to the degree of A. B., *a b;* to the degree of Ph. B., *ph.;* to the degree of S. B., — in Civil Engineering, *c e;* in Electrical Engineering, *e e;* in Mechanical Engineering, *m e;* and in the first two years of the Engineering Courses, before the differentiation of studies, *e;* to the degree of S. B., through the Science Courses, — in General Science, *sc;* in Biology, *bi;* in Chemistry, *ch;* and Medical Preparatory, *m p.*

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* The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

### Senior Class.

| | | |
|---|---|---|
| Bailey, Mabel Prescott, *a b* . | *Methuen* . . . . | 114 Professors Row. |
| Barnard, Percival Gates, *a b*, | *Lowell* . . . . | West Hall, 29. |
| Belcher, Walter Hermon, *a b*, | *W. Medford* . . | East Hall, 29. |
| Brothers, George Arthur, *e e*, | *Lowell* . . . . | West Hall, 26. |
| Cheever, Ralph Holbrook, *a b*, | *Portsmouth, N. H.* | Mid. Hall, 10. |
| Congdon, Joseph, *a b* . . . | *Clarendon, Vt.* . | Δ Υ House. |
| Dillon, David Francis, *a b* . | *Palmer* . . . . | West Hall, 17. |
| Fickett, Edward Wyman, *a b*, | *Spencer* . . . . | Δ Υ House. |
| Goddard, Mary Frances, *a b*, | *W. Somerville* . . | 46 Newbury St. |
| Hall, Clifford Foster, *a b* . . | *Nashua, N. H.* . | West Hall, 16½. |
| Hayes, Ethel Munroe, *a b* . | *Somerville* . . . | 252 Medford St. |
| Hayward, Daniel Baxter, *a b*, | *E. Braintree* . . | Θ Δ Χ House. |
| Hicks, Frank Files, *c e* . . | *W. Somerville* . . | 8 Lester Terrace. |
| Holbrook, Henry William, *a b*, | *Palmer* . . . . | West Hall, 24. |
| Ives, John Nash, *e e* . . . | *Dorchester* . . . | Δ Τ Δ House. |
| Johnson, Sidney Breed, *a b* . | *Lynn* . . . . . | East Hall, 24. |
| Jordan, Charles Gilbert, *a b* . | *E. Braintree* . . | West Hall, 28. |
| Larrabee, Frank Philip, *a b* . | *Portland, Me.* . . | West Hall, 1. |
| Maguire, George Francis, *a b*, | *Rockland* . . . | East Hall, 19. |
| Marvin, Reignold Kent, *a b*, | *Roxbury* . . . . | Θ Δ Χ House. |
| Meacom, Gertrude Holbrooke, | *a b*, 82 *Bellingham St., Chelsea.* | |
| Merrill, Meldon Humphrey, | *e e*, *Yarmouth, Me.* . | East Hall, 14. |
| Ohata, Konosuke, *e e* . . . | *Ibaraki-ken, Japan*, | East Hall, 34. |
| O'Neil, William Roe, *a b* . . | *Attleboro* . . . . | East Hall, 18. |
| Perry, Leslie Lawrence, *e e*, | *Chester, Vt.* . . | Δ Υ House. |
| Pierce, Guy Clifford, *e e* . . | *Lowell* . . . . | West Hall, 25. |
| Polk, Cora Alma, *a b* . . . | *Towanda, Pa.* . . | 158 Boston Ave., Medford. |
| Sabine, Edward Dana, *c e* . | *Malden* . . . . | West Hall, 27. |
| Sampson, Edwin Russell, *a b*, | *N. Weymouth* . . | West Hall, 2. |
| Smith, Orren Henry, *a b* . . | *Williamstown, Vt.* . | West Hall, 12. |
| Smith, Warner Daniel, *e e* . | *Marshfield, Vt.* . | Mid. Hall, 12. |
| Stevens, Edwin Bicknell, *a b*, | *Auburn, Me.* . . | Mr. Start's. |
| Stover, Josiah Albert, *a b* . | *Kittery, Me.* . . | East Hall, 15. |
| Symonds, Herbert Washburn, | *e e*, *Hancock, N. H.* . | East Hall, 34. |
| Thurston, Arthur, *e e* . . . | *Haverhill* . . . | West Hall, 26. |
| Tifft, Marie Louise, *a b* . . | *Somerville* . . . | 7 Lee St. |
| Whiton, Charles Edward, *e e*, | *Greenwood* . . . | West Hall, 2. |

### Junior Class.

| | | |
|---|---|---|
| Barden, Henrie Clark, *e e* . | *No. Attleboro* . . | East Hall, 21. |
| Blanchard, Lem Gale, *a b* . | *Tufts College* . . | East Hall, 27. |
| Brown, Helen Elizabeth, *a b*, | *Waltham* . . . | Metcalf Hall, 4. |

Browning, Charles Augustus, *e e*, *Somerville* . . East Hall, 21.
Butterfield, John McArthur, *a b*, *Revere* . . . East Hall, 20.
Corridan, Eugene Francis, *a b*, *Weymouth* . . . East Hall, 19.
Davis, Horace Amos, *ph* . . *Dorchester* . . . Θ Δ X House.
Day, John Boynton Wilson, *a b*, *Charlestown* . . West Hall, 3.
Dyer, Florence Gertrude, *a b*, *Medford* . . . . 9 Everett St.
Edmands, John Stetson, *c e*, *Somerville* . . . 86 Avon St.
Fenton, Robert Hall, *c e* . . *Willimantic, Conn.* Δ T House.
Fickett, Mary Grace, *a b* . . *Spencer* . . . . Metcalf Hall, 14.
Gale, Frank Randall, *a b* . . *Barre, Vt.* . . . West Hall, 16.
Garcelon, Herbert Irving, *e e*, *W. Somerville* . . East Hall, 21.
Gardner, Lucie Marion, *a b* . 4 *Lynde St., Salem.*
Graves, Charles Brown, *e* . *Marblehead* . . . West Hall, 13.
Green, Charles Boden, *c e* . *Lynn* . . . . . Dean Hall, 12.
Healey, Rolla Edwin, *e e* . . *Claremont, N. H.* Δ T Δ House.
Hewitt, Ernest John, *a b* . . *So. Royalton, Vt.*, West Hall, 3.
Hill, George William, *e e* . . *Stoneham* . . . Dean Hall, 12.
Hodgdon, Georgia Louise, *a b*, *Waltham* . . . . Metcalf Hall, 14.
Hodge, Edith Louise, *a b* . *Franklin* . . . Metcalf Hall, 10.
Hodgman, Arthur Ames, *a b*, *E. Somerville* . . West Hall, 24.
Knowlton, John Wellington, *a b*, *New Bedford* . Θ Δ X House.
Lane, Harry Alfred, *c e* . . *Foxboro* . . . . West Hall, 23.
McDonough, Margaret, *a b* . 51 *Winn St., Woburn.*
Mitchell, Stephen Clarence, *e e*, *Hull* . . . . . Dean Hall, 10.
Parks, Warren Stone, *a b* . *Hudson* . . . . Δ T Δ House.
Perry, Carlton Albert, *a b* . *Cooperstown, N. Y.*, West Hall, 22.
Plumb, Max Alaric, *sc* . . *Rocky Hill, Conn.*, West Hall, 9.
Putnam, Frank Wendell, *bi* . *Charlestown* . . . Δ T House.
Richardson, George Edward, *bi*, *Lowell* . . . . West Hall, 17.
Russell, Howard Irving, *e e*, *W. Somerville* . . East Hall, 21.
Sanford, Rollin Brewster, *a b*, *Albany, N. Y.* . . Θ Δ X House.
Start, Alaric Bertrand, *a b* . *Tufts College* . . Mr. Start's.
Thayer, Arthur Ellis, *e e* . . *W. Somerville* . . East Hall, 21.
Wheeler, Alfred Winslow, *a b*, *Oakland, Me.* . . Δ T House.
White, Winthrop Warner, *a b*, *Medford* . . . . Dean Hall, 13.
Williams, Franklin Bates, *a b*, *Roxbury* . . . . Dean Hall, 7.
Wyman, Walter Scott, *e e* . *Oakland, Me.* . . Δ T House.

### Sophomore Class.

Ahern, George Edward, *e* . *Arlington* . . . Middle Hall, 5.
Anderson, Malcolm Campbell, *a b*, *W. Somerville* . 18 Farragut Ave.
Andrews, Herbert Woodbury, *e*, *Lynn* . . . . East Hall, 11.
Arnold, John Emerson, *a b* . *Braintree* . . . East Hall, 5.
Avery, Elwood, *a b* . . . *Everett* . . . . . Mid. Hall, 5.

Bancroft, Irving Reed, *ph* . *Woburn* . . . . West Hall, 22.
Bartlett, Ethel Townsend, *ph*, *Somerville* . . . 113 Highland Ave.
Boomer, Perley Eugene, *a b*, *Medford* . . . . Mid. Hall, 5.
Buck, Lula Adine Howe, *a b*, *Medford* . . . . 158 Boston Ave.
Burbank, Ralph Lyman, *ch*. *Medford* . . . . East Hall, 32.
Capen, Samuel Paul, *a b* . . *Tufts College* . . 8 Professors Row.
Clark, Warren Stewart, *e* . *St. Albans, Vt.* . West Hall, 7.
Clayton, Osro Randall, *sc* . *Weston, Vt.* . . . Δ T House.
Cousens, John Albert, *a b* . *Brookline* . . . Δ T Δ House.
Crowley, Daniel Francis, *c e*, *Medford* . . . East Hall, 21.
Cummings, Morton Everett, *e*, *Medford* . . . . East Hall, 32.
Daniels, George Emory, *a b*, *Franklin* . . . . East Hall, 24.
Donaldson, James Frank, *a b*, *Salem* . . . . . West Hall, 28.
Evans, Mary Eliza, *a b* . .. 16 *Wright St., Stoneham.*
Flint, Marion Lenore, *a b* . *Spring St., Bedford.*
French, Edmund Merritt, *e*, *W. Hingham* . . East Hall, 26.
Gifford, Fannie Crocker, *a b*, *Provincetown* . . Metcalf Hall, 6.
Grant, Beatrice Alexandra, *a b*, 29 *Pleasant St., Woburn.*
Graves, Wallace Humphrey, *ch*, *Bangor, Me.* . . East Hall, 11.
Hammond, Roland, Jr., *a b* . *Brockton* . . . . East Hall, 23.
Harwood, George Alec., *e* . *Cambridge* . . . Middle Hall, 10.
Howe, Wilson Tyler, *c e* . . *E. Brookfield* . . West Hall, 27.
Huston, Milton, *ch* . . . . *W. Falmouth, Me.* East Hall, 9.
Johnson, Edward Dunbar, *a b*, *Methuen* . . . . West Hall, 19.
Jones, Guy Edward, *e* . . *Marlow, N. H.* . 7 Clarendon Ave., W. Somerville.
Jones, Willie Parker, *a b*, . *Stoneham* . . . East Hall, 20.
Maddocks, John Arthur, *e* . *Boothbay Harbor, Me.* West Hall, 21.
May, Benjamin Dexter, *a b* . *Hudson* . . . . Dean Hall, 11.
Merrill, Harriette Johnson, *a b*, *E. Eddington, Me.* Metcalf Hall, 11.
Mitchell, Josephine Lord, *a b*, *Somerville* . . . 24 Thorpe Place.
Moore, Willis Albert, *a b* . *Melrose* . . . . East Hall, 29.
Noyes, Charles Ellsworth, *ph*, *Lisbon, N. H.* . . Δ T House.
Parker, Charles William, *ch*, *Reading* . . . . West Hall, 1.
Patterson, Walter Arthur, *e*, *Waltham* . . . West Hall, 11.
Peirce, Frank Lincoln, *a b* . *Brimfield* . . . . Δ T House.
Randlett, Fred Morse, *e e* . *Lawrence* . . . Dean Hall, 10.
Ransom, Clara, *a b* . . . . *Tufts College* . . 80 Professors Row.
Ransom, William Richard, *a b*, *Tufts College* . . 80 Professors Row.
Root, Martha Lane, *a b* . . *East Duglass* . . Metcalf Hall, 6.
Rowbotham, George Walter, *e*, *Boston* . . . . West Hall, 10.
Russell, James Porter, *a b* . *Farmington, Me.* . Δ T House.
Schoolfield; Frank Robert, *e*, *Baltimore, Md.* . East Hall, 1.
Shaw, Edwin Adams, *e* . . *W. Somerville* . . 18 Bellingham St.

Small, Sylvanus Griswold, *a b*, *Baldwinville* . . 14 Emery St.
Smith, Arthur Garfield, *a b* . *N. Tunbridge, Vt.* East Hall, 5.
Stebbins, Katherine Louise, *a b*, *W. Somerville* . 30 Day Street.
Sweet, Harold Edward, *a b* . *Attleboro* . . . . Δ Υ House.
Titus, Anson Merrill, *e* . . *W. Somerville* . . Raymond Ave.
Tousey, Coleman, *a b* . . . *Tufts College* . . 106 Professors Row.
Town, Frederick Edward, *e*, *Washington, D. C.* East Hall, 1.
Turner, Harriette Alice, *a b*, *W. Somerville* . . Mt. Pleasant Ave.
Welch, Walter Frederick, *a b*, *Stoneham* . . . East Hall, 20.
Wells, Roy Titus, *e* . . . *Foxboro* . . . . East Hall, 30.
Whitman, Walter George, *a b*, *Norway, Me.* . . East Hall, 13.

**Freshman Class.**

Allen, Charles Rollin, *e* . . *Barre, Vt.* . . . . West Hall, 15.
Andrews, Charles Masson, *sc*, *Newtonville* . . . East Hall, 31.
Barker, Fred Percy, *e* . . . *Waltham* . . . . West Hall, 11.
Bartlett, Lewis, *e* . . . . *Marblehead* . . . East Hall, 12.
Bates, Henri Evans, *e* . . *Marion* . . . . East Hall, 30.
Bean, Charles Alvin, *a b* . . *Hudson* . . . . Dean Hall, 11.
Beaudry, Charles Shingleton, *e*, *Reading* . . . West Hall, 1.
Bradbury, Fannie Eliza, *ph*, *Milford* . . . . Metcalf Hall, 3.
Brightman, Carl Gordon, *e* . *Round Pond, Me.* . East Hall, 13.
Buss, Arthur Stacey, *e* . . *Medford* . . . . Dean Hall, 14.
Butterworth, Henry David, *e*, *Attleboro* . . . East Hall, 25.
Carleton, Grace Willis, *a b* . *Wakefield* . . . Metcalf Hall, 1.
Carpenter, Edwin King, *a b*, *West Medford* . . Dean Hall, 14.
Christian, Leroy Bernard, *e*, *Auburn, Me.* . . Middle Hall, 9.
Chubb, Thomas Briggs, *e* . *Tufts College* . . Middle Hall, 11.
Clapp, Albert Lewis, *ch* . . *Marblehead* . . . East Hall, 12.
Clough, Harry Wescott, *a b*, *Lowell* . . . . West Hall, 32.
Cogswell, Lena Rice, *a b* . . *Gardner* . . . . 20 Conwell Ave., Somerville.
Cousens, Kate Elizabeth, *a b*, *Brookline* . . . Metcalf Hall, 12.
Cowan, Frank Joseph, *a b* . *Farmington, Me.* . East Hall, 33.
Cutler, Augustus Leon, *e* . *Wakefield* . . . West Hall, 5.
Davis, Mervin Nathaniel, *e* . *Haverhill* . . . Middle Hall, 7.
Doane, Ernest Stanley, *ph* . *Marblehead* . . . Dean Hall, 3.
Eveleth, Charles Wonson, *m p*, *Marblehead* . . . West Hall, 30.
Flaherty, William Henry, *e*, *Somerville* . . . 261 Washington St.
Forster, George Fleming, *a b*, *Lawrence* . . . East Hall, 31.
Gage, Isaac Bradley, *a b* . . *W. Medford* . . Dean Hall, 13.
Giles, Fred Elmer, *e* . . . *Somerville* . . . East Hall, 10.
Goudey, Grace Evelyn, *a b* . 53 *Buckman Street, Everett.*
Griffiths, Willis Wentworth, *e*, *Medford* . . . . Middle Hall, 13.

Griswold, Fred Fay, *e* . . *So. Manchester, Conn.* Middle Hall, 12.
Hackett, Cora May, *a b* . . *Wakefield* . . . Metcalf Hall, 1.
Hall, Samuel Thomas, *e* . . *Medford* . . . . Middle Hall, 13.
Heath, George Byron, *ph* . *Calais, Me.* . . . West Hall, 30.
Holmes, Albert Bourne, *e* . *Sharon* . . . . Dean Hall, 2.
Holmes, Harry Emery, *e* . *Medford* . . . . Middle Hall, 13.
Howe, Frank Merrill, *a b* . *So. Weymouth* . East Hall, 3.
Hunter, Leslie Erastus, *e* . *Essex Junction, Vt.* East Hall, 2.
Jacobs, Frank Collins, *e* . . *Franklin* . . . East Hall, 15.
Kent, Ira Rich, *a b* . . . *Calais, Vt.* . . . West Hall, 12.
Knight, Isabella Gertrude, *a b*, *Tufts College* . . 114 Professors Row.
Knowlton, Frank Warren, *a b*, *New Bedford* . . East Hall, 28.
Lane, Grace Harvey, *a b* . . *W. Medford* . . 66 Brooks St.
Lawrence, Bertha Faustina, *bi*, *Stowe* . . . . Metcalf Hall, 13.
Lewis, Florence May, *a b* . *Main St., Stoneham.*
Litchfield, Harry, *e* . . . *Fitchburg* . . . West Hall, 31.
Lovering, Frank Woods, *sc*, *W. Medford* . . Dean Hall, 13.
Lyons, Jerold Thomas, *a b* . 118 *Maverick St., Chelsea.*
Mange, John Isaac, *e* . . . *Kingston* . . . . East Hall, 4.
Marble, Ernest Gilman, *e* . *Methuen* . . . . West Hall, 19.
Marvin, Charles Remington, *ab*, *Roxbury* . . . . West Hall, 25.
Mason, William Madison, *ch*, *Washington, D. C.*, East Hall, 23.
Meader, Edgar Keene, *m p* . *Marblehead* . . . West Hall, 30.
Metcalf, Herbert Lester, *e* . *Franklin* . . . . East Hall, 9.
Morton, George Fisher, *bi* . *Cambridge* . . . West Hall, 31.
Morton, Anna Lucy, *sc* . . *Cambridge* . . . Metcalf Hall, 7.
Nichols, Arvilla Florence, *a b*, *Somerville* . . . 505 Broadway.
Nickless, Henry Eugene, *a b*, *Woburn* . . . . East Hall, 2.
Olmsted, Elmer Sheridan . *Somerville* . . . East Hall, 30.
Perkins, Llewellyn Rood . *So. Woodstock, Vt.* 80 Professors Row.
Philbrook, Etta Frances, *a b*, 85 *Ferry St., Everett.*
Ralph, Hugh Henry, *a b* . . *Brownsville, Vt.* . West Hall, 16.
Rand, Charles Henry . . . *Waltham* . . . . West Hall, 14.
Rhind, Ernest Seymour, *ph*, *Attleboro* . . . East Hall, 25.
Rich, Barzillai Allen, *e* . . *Hingham* . . . . East Hall, 26.
Rich, Edward Wellington, *a b*, *West Acton* . . . East Hall, 28.
Richardson, Ernest Stanley, *Danvers* . . . . Δ T House.
Richardson, Herbert Hay, *a b*, *Stoneham* . . . East Hall, 17.
Robinson, George Nelson . *Winchester* . . . East Hall, 29.
Sedgwick, Otis White, *ch* . *Bondsville* . . . . West Hall, 20.
Shaw, Ellen Eddy, *m p* . . 14 *South St., Woburn.*
Smith, Forster Hanson, *a b* . *Lowell* . . . . West Hall, 32.
Smith, Payson, *a b* . . . . *Portland, Me.* . . East Hall, 27.
Smith, Simeon Conant, *a b* . *Provincetown* . . Dean Hall, 3.

Smith, William Boulay, Jr., *e*, *New Bedford* . . East Hall, 22.
Stowell, Jean Henry, *e* . . *Charlestown* . . . Middle Hall, 11.
Sturtevant, Morton Adams, *a b*, *Stoneham* . . . East Hall, 17.
Taylor, Elizabeth French, *a b*, *Nashua, N. H.* . 72 Professors Row.
Trow, Harris Cushman, *e* . *Kingston* . . . . East Hall, 3.
Wallace, John Eugene, *e*, *Waterloo, P. Q., Canada*, Middle Hall, 6.
Watson, Clara Eva, *a b* . . *Nashua, N. H.* . Metcalf Hall, 5.
White, Helen Ridler, *a b* . . *Pawtucket, R. I.* . Metcalf Hall, 2.
Whitney, Arthur Bryant, *a b*, *Milford* . . . . Dean Hall, 9.
Wiley, Harry Farrington, *e*, *Peabody* . . . . East Hall, 4.
Yeaton, Mary Frances, *a b* . 22 *Pond St., Stoneham.*

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Hill, George Bond, *a b* . . *Lowell* . . . . Dean Hall, 5.
Horton, Frederick Davis, *e* . *Pawtucket, R. I.* . West Hall, 6.
Vincent, Shelley Davis, *ph* . *Danbury, Conn.* . West Hall, 15.

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**Special Students.**

In the following list the Roman numeral indicates the year of attendance; the italicized department name is that of the student's major department; and the following subjects are those taken by the student for the current year. Abbreviations: Chem., Chemistry; Civ. Engin., Civil Engineering; Draw., Drawing; Elec., Electricity; Elec. Lab., Electrical Laboratory; El. Mech., Elements of Mechanism; Eng., English; Eng. Lit., English Literature; Geol., Geology; Germ., German; Hist., History; Math., Mathematics; Mech., Mechanics; Mech. Engin., Mechanical Engineering; Phil., Philosophy.

Atwood, Louise Russell . . *Medford* . . . . 4 Garden St.
III. *Eng. Lit.* Eng. 6, French 3, Phil. 2, Physics 1, Geol. 1.
Bailey, Arthur Low . . . *Methuen* . . . . 90 Curtis St.
II. *Eng. Lit.* Eng. Lit. 2, Germ. 2, French 3, Hist. 5, Phil. 1.
Bailey, Dora Albonetta . . *Somerville* . . . Highland Ave., cor. Central St.
II. *Germ.* Eng. Lit. 1, 2, Germ. 2, French 4, Phil. 2, Music 1.
Carvill, Lizzie Maud . . . *Somerville* . . . 28 Highland Ave.
I. *Germ.* Eng. 1, 2, Eng. Lit. 2, Germ. 1, Phil. 2, Chem. 1.
Chapman, William Wescott, *Providence, R. I.* . West Hall, 4.
I. *Civ. Engin.* Math. 1, 3, Civ. Eng. 1, Physics 1, Draw., Mech.
Clark, Irving Stockton . . 14 *Greenwich St., Boston.*
II. *Draw.* French 2, Math. 3, Chem. 1, Physics 1, Draw.
Cummings, Maidelle Leslie . *W. Somerville* . . 48 Wallace St.
II. *French.* Eng. Lit. 3 (a), Germ. 2, French 4, Hist. 1, Music 1.

Davis, Edith Lovell . . . *Fitchburg* . . . Metcalf Hall, 7.
I. *Eng. Lit.* Eng. 1, Eng. Lit. 1, 2, French 2, Hist. 1, Math. 1.
Eaton, Mary Helen . . . 954 *Main St., N. Woburn.*
I. *Hist.* Eng. Lit. 1, 2, Germ. 2, French 1, Hist. 1, Phil. 2.
Forster, William Hayes . . *Erie, Pa.* . . . West Hall, 4.
I. *Mech. Eng.* Math. 3, Chem. 1, El. Mech., Elec., Elec. Lab., Draw.
Gould, Nina Augusta Tyler, *Warren* . . . . 101 Talbot Ave.
I. *French.* Germ. 1, 3, French 2, 3, Phil. 2.
Hilliard, Helen Jones . . . *Provincetown* . . Metcalf Hall, 2.
I. *French.* Germ. 1, French 2, Music 1.
McCall, Ella Frances Louise, 5 *Middlesex St., Woburn.*
I. *Eng. Lit.* Eng. 1, Eng. Lit. 1, 2, Germ. 1, French 2, Hist. 1.
Merritt, Grace Tilden . . . *Somerville* . . . 281 Summit Ave.
I. *Biology.* Biology 1.
Parke, Robert Hayward . . *Monson* . . . . East Hall, 6.
II. *Engin.* Work of Sophomore year, Engineering Courses.
Smith, Payson . . . . . *Portland, Me.* . . East Hall, 27.
II. *Pol. Sci.* Eng. 2, Eng. Lit. 4 (a), French 3, Latin 1, 2, Greek 5, Pol. Sci. 1.
Walker, John Meredith . . *Waltham* . . . West Hall, 11.
II. *Biol.* Eng. 2, Orat. 1, Germ. 1, Latin 2, Math. 1, Biol. 1, Chem. 1.
Wilson, May . . . . . *Somerville* . . . 40 Vinal St.
II. *Germ.* Eng. 2, Eng. Lit. 2, Germ. 2, French 1, Phil. 1.
Worthen, Carrie Leeds . . *Melrose* . . . . Metcalf Hall, 16.
I. *Germ.* Eng. Lit. 1, 2, Germ. 3, French 1, Greek 2, Hist. 1.

## DIVINITY SCHOOL.

### Senior Class.

Blackford, Frank . . . . *El Dorado, O.* . . Paige Hall, 18.
B. S., Nat. Norm. Univ., 1892.
Dickerson, Jesse Clifford . *Detroit, Mich.* . . Paige Hall, 6.
Eddy, Frank Fay . . . . *Charlotte, Mich.* . Paige Hall, 32.
Ferguson, Frank Alvah . . *Somerville* . . . 316 Beacon St.
A. B., Bost. Univ., 1889.
Fischer, Theodore Adolph . *Meriden, Conn.* . Paige Hall, 19.
Hackett, Edward Harold . *Tufts College* . . Paige Hall, 16.
(Bangor Theological Seminary.)
Vossema, Hendrik . . . *Nuis, Holland* . . Paige Hall, 17.
(Meadville Theological School.)
Ward, Charles Merrill . . *Brattleboro, Vt.* . Heth Aleph Res House.
Wilson, John Harner . . . *Philadelphia, Pa.* . Paige Hall, 7.

### Middle Class.

| | | |
|---|---|---|
| Bartlett, Alden Eugene | *Newtonville* | Paige Hall, 30. |
| Benton, Herbert Elmon<br>A. B., 1894. | *Annisquam* | Paige Hall, 13. |
| Bissell, Flint Mandrin | *Wellesley* | Paige Hall, 23. |
| Earle, Augusta Gertrude | *Somerville* | 8 Franklin St. |
| Eills, John | *Lowell* | Boston Ave. |
| Fortier, George Ferdinand | *Somerville* | Paige Hall, 12. |
| Jones, Clifford Ernest | *Cleveland, O.* | Paige Hall, 10. |
| Leavitt, Fenwick Lasselle | *Auburn, Me.* | Paige Hall, 24. |
| Macduff, Isabella Stirling | *Claremont, N. H.* | Talbot Ave. |
| Powers, Mariette | *Rumford Falls, Me.*, | Metcalf Hall, 10. |
| Robbins, Clarence Guy | *Melrose* | Paige Hall, 31. |
| Small, Willard Stanton<br>A. B., 1894. | *Provincetown* | Mt. Pleasant Ave. |
| Smith, Nancy Wiley Paine | *Tufts College* | Boston Ave. |
| Taylor, Fred Allan<br>A. B., 1886. | *W. Somerville* | 38 Wallace St. |
| Thompson, George Linnæus, | *Stafford, Conn.* | Paige Hall, 29. |
| Walker, Fred Storer<br>A. B., 1894. | *Portland, Me.* | Paige Hall, 8. |

### Junior Class.

| | | |
|---|---|---|
| Amies, Olive Josephine | *Philadelphia, Pa.* | Metcalf Hall, 8. |
| Ball, Dwight Ambrose | *Bellows Falls, Vt.*, | Paige Hall, 22. |
| Barney, Edward Mitchell | *Lynn* | Paige Hall, 20. |
| Boivin, Bertram D. | *Hinsdale, N. H.* | Paige Hall, 15. |
| Eaton, Clarence Livingstone,<br>A. B., 1895. | *Worcester* | Paige Hall, 36. |
| Mathew, Tacy<br>A. B., Buchtel College, 1895. | *Wilmington, O.* | 102 Curtis Street. |
| Milton, Lucy Almira | *Waverley* | 90 Curtis Street. |
| Rouillard, Harry Enoch | *Hinsdale, N. H.* | Paige Hall, 1. |
| Taylor, William John<br>B. S., Univ. of Minnesota, 1895. | *Minneapolis, Minn.*, | Paige Hall, 25. |

### Sub-Junior Class.

| | | |
|---|---|---|
| Austin, Fannie Elmira | *Akron, O.* | 102 Curtis Street. |
| Lane, Arthur Kempton | *Boston* | Paige Hall, 5. |
| Patterson, Charles Franklin, | *Medford* | Paige Hall, 34. |
| Reifsnider, Edson | *Chicago, Ill.* | Paige Hall, 27. |

### Special Students.

| | | |
|---|---|---|
| Eills, Corinne Dicks | *Tufts College* | Boston Ave. |
| Goldthwaite, Elizabeth Holt, | *Danvers* | 20 Conwell Ave. |
| Selman, Marcia Martin | *Marblehead* | 90 Curtis Street. |

## MEDICAL SCHOOL.

### Senior Class.

| | |
|---|---|
| Avedisian, Avedis der | *Armenia.* |
| Averill, George Goodwin, M. D. | *Montague, Me.* |
| Barry, James Henry | *Charlestown.* |
| Bowker, Jane Howorth | *Brookline.* |
| Brightman, Helen | *Acushnet.* |
| Brousseau, William Gilbert | *Boston.* |
| Chandler, Frederick Emerson | *Dorchester.* |
| Charest, Joseph Amedee, D. V. S. | *Montreal, P. Q.* |
| Cleary, James, D. D. S. | *Leominster.* |
| Coon, William Hall | *Wakefield.* |
| Cummings, William Sinnott | *West Stoughton.* |
| Cushing, Charles Baldwin | *Cohasset.* |
| French, John Innes | *Woburn.* |
| Gage, George Asahel | *Holyoke.* |
| Greene, William Henry | *Roxbury.* |
| Grovestein, William Pride | *Cambridge.* |
| Harvey, Frank, D. V. S. | *Boston.* |
| Holmes, Harry Clinton | *Cambridge.* |
| Johnstone, William Joseph, M. D. | *Boston.* |
| Kelleher, Patrick Francis | *Cambridge.* |
| Leavitt, Edward Alden | *Boston.* |
| Littig, Marq D., D. D. S. | *Davenport, Iowa.* |
| MacDermott, Robert Langdon | *New York City.* |
| MacDonnell, John, M. D. | *South Boston.* |
| McNamara, Eugene Thomas | *Camden, Me.* |
| McNeil, Archibald | *New Haven, Conn.* |
| Moir, Archibald Campbell Milton | *Cambridge.* |
| Ordway, Charles Anthony | *Concord, N. H.* |
| Patch, Annie Sophia Kenny | *Farmington, N. H.* |
| Patrick, Thomas William, M. D. | *Boston.* |
| Pillsbury, Ernest Dean | *Somerville.* |
| Pond, Eleanor Dorcas, A. B. | *Medway.* |
| Rice, Walter Henry | *Waltham.* |
| Robinson, Fred Hilliard | *Somerville.* |
| Russell, Frederick James | *New Bedford.* |
| Stevens, Sara Elmina | *Roxbury.* |
| Tilton, Letitia Marie, M. D. | *Boston.* |
| Whipple, Albert Lawrence, M. D. | *Hamilton.* |

**Middle Class.**

| | |
|---|---|
| Avedisian, Hagop der | *Armenia.* |
| Bailey, Ernest Harry | *Northfield, Vt.* |
| Bartlett, Robert Lander, D. M. D. | *Lynn.* |
| Birmingham, Louis Howland | *Malden.* |
| Bowman, Anthony William | *Charlestown.* |
| Bourn, Cora Etta | *Providence, R. I.* |
| Brooks, Simon Pomeroy, A. B. | *Springfield.* |
| Burgess, Charles James | *Lawrence.* |
| Chevigny, Henry Herbert | *Brockton.* |
| Cochrane, George William | *Franklin.* |
| Cote, Henry Joseph | *Boston.* |
| Djelalian, Hairabed F. | *Dardanelles, Turkey.* |
| Ellard, Elizabeth Marie | *Boston.* |
| Ford, Michael Angelo | *Cambridgeport.* |
| Frost, Flora Eva | *Granby.* |
| Goddard, Henry Edward, A. B. | *Brockton.* |
| Griffin, Fred Stanley | *Cochituate.* |
| Hart, Francis Joseph | *Charlestown.* |
| Hayden, Lewis Brooks | *Augusta, Me.* |
| Healey, John Aloysius | *East Boston.* |
| Hearn, Thomas Henry | *Boston.* |
| Heaton, Thomas Henry | *Cambridge.* |
| Hickey, Lawrence Joseph | *Brighton.* |
| Hopkins, Bertrand Hiram | *West Medford.* |
| Howland, Edgar Joseph | *Somerville.* |
| Johnson, Henry Peyton | *Richmond, Va.* |
| Lord, Lester Winslow | *West Ossipee, N. H.* |
| Mackintosh, Ernest Robert | *Brookline.* |
| Macy, Fred Stevens | *Malden.* |
| McGee, Fannie Maria | *Newton.* |
| Moffatt, Robert Tucker, D. M. D. | *Boston.* |
| Morse, Frederick Otis | *East Boston.* |
| Murphy, Jeremiah Edward | *Somerville.* |
| Orr, Samuel Sanford | *Port Morien, C. B.* |
| Peck, Luke Baker | *Brookline.* |
| Pigott, Thomas Edmund | *Winthrop.* |
| Place, Ralph Waldo | *Boston.* |
| Proctor, John Donald | *Keene, N. H.* |
| Riley, Elizabeth Angela | *Chelsea.* |
| Ryan, John Francis | *Brookline.* |
| Sexton, James Henry, Jr. | *Malden.* |
| Shaw, Thomas Wignall | *Somerville.* |
| Simpson, Joseph | *Boston.* |

| | |
|---|---|
| Shisler, William Henry | *Fort Erie, Ont.* |
| Smith, Lewis Albert | *Warren.* |
| Sullivan, Francis Augustus | *Cambridge.* |
| Walker, Albert Gustavus | *Boston.* |
| Webber, Sarah Southworth | *Newton.* |
| Young, James Alexander | *East Boston.* |

**Freshman Class.**

| | |
|---|---|
| Abel, Thomas Earl | *Lynn.* |
| Bacon, Joseph Chester | *Brookline.* |
| Baker, Lewis Forrester | *Wollaston.* |
| Beal, Herman Alaric | *Mattapan.* |
| Berg, Tekla | *Sweden.* |
| Bertrand, Alexis Everiste | *Lowell.* |
| Bowens, Bruce Tucker | *Wilmington, N. C.* |
| Brown, John | *Fall River.* |
| Butler, Mary Louise | *Bayou Sara, La.* |
| Caisse, George Emil | *Lowell.* |
| Corbett, Francis Alfred | *Newport, R. I.* |
| Crittenden, Harrison Murray | *Haverhill.* |
| Dalton, Henry | *Cambridgeport.* |
| Davis, Winnefred Puffer | *Fort Madison, Ia.* |
| Donaldson, Olive Kate | *Worcester.* |
| Dow, David Crocker | *Cambridgeport.* |
| Dresser, Arthur James, V. S. | *Hinsdale.* |
| Evans, Reuben Osgood | *Malden.* |
| Flynn, John Leo | *Cambridgeport.* |
| Foster, Harry Ruffee | *Chelsea.* |
| Gilbert, Frank Leslie | *Boston.* |
| Gleason, Patrick Sebastian | *Waltham.* |
| Groll, Maximilian Charles | *Roxbury.* |
| Groppner, Max Karl | *Germany.* |
| Hall, Walter Davis | *Medford.* |
| Hamblen, Edward Everett | *Somerville.* |
| Herrick, Florence Adelaide | *Cambridge.* |
| Holland, William Timothy | *Winchester.* |
| Holmes, Harry Clinton | *Cambridge.* |
| Holmes, Luke Melvin | *New Haven, Conn.* |
| Ives, Henry | *Boston.* |
| Joslin, Edward Herbert | *Keene, N. H.* |
| Judkins, Anna Gertrude | *Boston.* |
| Kelley, Joseph Henry Hart | *Charlestown.* |
| Ladd, Fred Eugene | *Brockton.* |
| Lane, Frank Ellsworth | *Cambridgeport.* |

| | |
|---|---|
| Ledwell, Richard John | *Boston.* |
| Libby, Mary Gordon | *Boston.* |
| Lilly, Thomas Eugene | *Lawrence.* |
| Lockwood, Charles Edwin | *Binghamton, N. Y.* |
| Lublin, Janet | *Boston.* |
| MacCabe, Arthur | *Cambridgeport.* |
| MacDonald, Archibald A. | *St. Andrews, N. S.* |
| Maxwell, Virginia | *Winchester.* |
| Mayers, John Edward | *South Boston.* |
| Meek, Edith R. E. | *Fall River.* |
| Merrill, Stephen Douglass | *Boston.* |
| Parsonnet, Augusta | *Boston.* |
| Parsonnet, Victor | *Boston.* |
| Peabody, Sophia Reed | *Lawrence.* |
| Pease, Charles Valentine | *Dorchester.* |
| Petluck, Joseph | *Boston.* |
| Prior, James Edward | *Plainville, Conn.* |
| Reid, Eustace Palmer | *Somerset, N. S.* |
| Ryan, George Whitehouse | *Boston.* |
| Santosuosso, Joseph | *Boston.* |
| Saville, George Kittredge, Jr. | *Boston.* |
| Schofield, Otho | *Black River, N. S.* |
| Shershefsky, Cecilia | *Portland, Me.* |
| Siske, Harry Edward | *Palmer.* |
| Slack, Frank Hervey | *North Abington.* |
| Smith, Alfred Charles | *Malden.* |
| Stevens, Ruey Bartlett | *Roslindale.* |
| Stodder, Charles William | *Jamaica Plain.* |
| Street, Lionel Alexander Burnet | *Beachmont.* |
| Stroud, Charles Crawford, A. B. | *Tufts College.* |
| Tobey, Nathan Paul | *Cambridgeport.* |
| Truworthy, Harry Leslie | *East Newport, Me.* |
| Thompson, Peter Hunter | *Boston.* |
| Wellington, Mary E. | *New York City.* |
| Wilson, Almira Janette | *Boston.* |
| Wilson, Joseph Aloysius | *Charlestown.* |
| Wood, Mary Anna | *Pittsfield.* |
| Woodhead, Raynor | *Pawtucket, R. I.* |

**Special Students.**

| | |
|---|---|
| Allison, George Woodbury | *Charlestown.* |
| Cook, Charles H., Jr. | *Concord, N. H.* |
| Greene, Willard Beckwith | *Cambridge.* |
| Harris, Sylvia Fowler | *Berkeley, Cal.* |

| | |
|---|---|
| Hartshorn, Edward | *Somerville.* |
| Holbrook, Helen | *Waltham.* |
| Larabee, Frank Walton | *Auburn, Me.* |
| Pecanso, Fannie Abbott | *Lawrence.* |
| Pedrick, Catherine Frances | *Lawrence.* |
| Taft, Edward Henry | *W. Gouldsboro, Me.* |
| Wagner, Emma J. | *West Somerville.* |
| White, Flora Jane | *Boston.* |
| Williams, Adelbert Franklin | *Gardiner, Me.* |

## SUMMARY.

| | | |
|---|---|---|
| CORPS OF INSTRUCTION: | | |
| Emeritus | 2 | |
| Active | 55 | |
| Assistants | 19 | |
| Lecturers | 12 | |
| Total engaged in work of instruction | 86 | |
| **Students.** | | |
| COLLEGE OF LETTERS: | | |
| Graduate | 7 | |
| Senior | 37 | |
| Junior | 39 | |
| Sophomore | 60 | |
| Freshman | 88 | |
| Special | 19 | |
| | — | 250 |
| DIVINITY SCHOOL: | | |
| Senior | 9 | |
| Middle | 16 | |
| Junior | 9 | |
| Sub-junior | 4 | |
| Special | 3 | |
| | — | 41 |
| MEDICAL SCHOOL: | | |
| Senior | 38 | |
| Middle | 49 | |
| Freshman | 74 | |
| Special | 13 | |
| | — | 174 |
| TOTAL NUMBER OF STUDENTS | | 465 |

# THE COLLEGE OF LETTERS

# THE COLLEGE OF LETTERS

# Faculty of the College of Letters.

ELMER H. CAPEN, D. D., PRESIDENT.
*Professor of Moral Philosophy and Political Economy.*
JOHN P. MARSHALL, A. M., DEAN.
*Pearson Professor of Geology and Mineralogy.*
JEROME SCHNEIDER, PH. D.
*Professor of the Greek Language and Literature.*
HEMAN A. DEARBORN, A. M.
*Professor of the Latin Language and Literature.*
WILLIAM R. SHIPMAN, D. D.
*Professor of Rhetoric, Logic, and Metaphysics.*
BENJAMIN G. BROWN, A. M.
*Walker Professor of Mathematics.*
CHARLES D. BRAY, C. E., A. M.
*Professor of Civil and Mechanical Engineering.*
CHARLES E. FAY, A. M.
*Wade Professor of Modern Languages.*
AMOS E. DOLBEAR, M. E., PH. D.
*Professor of Physics and Astronomy.*
WILLIAM L. HOOPER, A. M.
*Professor of Electrical Engineering.*
DAVID L. MAULSBY, A. M.
*Professor of English Literature and Oratory.*
J. STERLING KINGSLEY, S. D.
*Professor of Biology.*
FRANK P. GRAVES, A. M., PH. D.
*Professor of Classical Philology.*
GARDNER C. ANTHONY, A. M.
*Professor of Technical Drawing.*
ARTHUR MICHAEL, A. M., PH. D.
*Professor of Chemistry.*
LEO R. LEWIS, A. M.
*Professor of the History and Theory of Music.*
FRANK W. DURKEE, A. M.
*Assistant Professor of Chemistry and Instructor in Physical Training.*
FRANK E. SANBORN, S. B.
*Instructor in Mechanical Engineering.*
EDWIN A. START, A. M.
*Instructor in History.*

FRANK T. DANIELS, A. M. B., SECRETARY.
*Instructor in Civil Engineering.*

HORATIO W. MYRICK, A. M. B.
*Walker Special Instructor and Instructor in Electrical Engineering.*

THOMAS WHITTEMORE, A. B.
*Instructor in English.*

JOHN E. BUCHER, A. C., PH. D.
*Instructor in Organic Chemistry.*

CHARLES ST. CLAIR WADE, A. M.
*Instructor in French.*

FRANK G. WREN, A. B.
*Instructor in Mathematics.*

HOWARD H. HIGBEE, A. B., PH. D.
*Instructor in Quantitative Analysis.*

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## STANDING COMMITTEES OF THE FACULTY.

PROMOTIONS: Professor Shipman, *Chairman;* Professors Hooper, Brown, Fay, and Assistant Professor Durkee.

SCHOLARSHIPS AND AIDS: President Capen, *Chairman;* Professors Shipman and Dearborn.

PROGRAM: Mr. Start, *Chairman;* Professors Hooper, Dearborn, Brown, and Lewis.

CATALOGUE: Mr. Start, *Chairman;* Professors Hooper and Maulsby.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Knight (from the Divinity School), *Chairman;* Assistant Professor Durkee, and Mr. Start.

GLEE CLUB: Professor Lewis, *Chairman;* Professor Graves, and Professor Knight (from the Divinity School).

FRESHMAN PLANS OF STUDY: Professor Dearborn, *Chairman;* Professors Shipman, Brown, Graves, and Lewis.

DEPARTMENT OF ENGINEERING: Professor Brown, *Chairman;* President Capen, Professors Hooper and Bray, and Assistant Professor Durkee.

BOOKS AND SUPPLIES: Professor Lewis, *Chairman;* Assistant Professor Durkee, and Mr. Wren.

French.

**14.** ELEMENTARY FRENCH.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives"; the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under elementary German (*a*).]

(*b*) Ability to translate simple prose at sight.

**[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]**

(*c*) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German (*c*).]

**15.** INTERMEDIATE FRENCH.

(*a*) and (*c*) as above.

(*b*) He must have translated the equivalent of five hundred pages of French, including the plays, Mademoiselle de la Seiglière (Sandeau) and Athalie (Racine).

**16.** ADVANCED FRENCH.

(*a*) Proficiency in more advanced grammar. In addition to a knowledge of the accidence and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, especially the use of modes and tenses, and with the more frequently recurring idiomatic phrases.

(*b*) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including Le Siège de Berlin and La dernière Classe (Daudet); Colomba (Mérimée); Mademoiselle de la Seiglière, the play (Sandeau); Jeanne Darc (Henri Martin); and one play each of Corneille, Racine, and Molière.

(*c*) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German (*c*).]

Mathematics.

**17.** ARITHMETIC, including the Metric System.

**18.** ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

**19.** PLANE GEOMETRY. **Mathematics.**

**20.** SOLID GEOMETRY.

**21.** (*a*) ANCIENT HISTORY (Greece and Rome), or **History.**
(*b*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or
(*c*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The following text-books are recommended and will indicate the amount of preparation required: (*a*) and (*b*), Sheldon's Outlines of General History; (*a*), for Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools, Johnston's History of the United States for Schools. The use of such manuals as Wilder's English History (Laboratory method) and Bacheler's American History (Library method) is helpful.

**22.** ENGLISH. **English.**

*Note.* — **No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.**

1. *Reading and Practice.* — A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1896. — Shakespeare's A Midsummer Night's Dream; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Scott's Woodstock; Macaulay's Essay on Milton; Longfellow's Evangeline; George Eliot's Silas Marner.

1897. — Shakespeare's As You Like It; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

1898. — Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner;

**English.** Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

2. *Study and Practice.* — This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clearness and accuracy. The books set for this part of the examination will be:—

1896. — Shakespeare's The Merchant of Venice; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Webster's First Bunker Hill Oration.

1897. — Shakespeare's The Merchant of Venice; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson.

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

**Sciences.** **23.** PHYSICS. — The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department.

**24.** CHEMISTRY. — Remsen's Briefer Course or its equivalent.

**25.** NATURAL HISTORY. — Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

**26.** FREEHAND DRAWING. — Outline drawing from simple casts, geometric models, and groups of models.

## EXAMINATION GROUPS.

**For courses leading to degree of A. B.** Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups:—

**Group I.**

For courses leading to degree of A. B.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

**Group II.**

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16.
FRENCH, 14. } or { GERMAN, 11.

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

For courses leading to degree of Ph. B.

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

**Group III.**

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 12. } or { FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11.

**Group IV.**

MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16. } or { GERMAN, 11 and 12. / FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11. }

PHYSICS, 23.
CHEMISTRY, 24.
NATURAL HISTORY, 25.

[LATIN, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, GERMAN, 11 and 12, or FRENCH, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than

**For courses leading to degree of Ph. B.**

that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group III in modern languages, and of elementary work in three scientific subjects.

**For courses leading to degree of S. B.**

**Group V.**

MATHEMATICS, HISTORY, and ENGLISH, as in I.
LATIN, 1, 2, and in 4, four books of the Aeneid; or
GERMAN, 11 and 12; or
FRENCH, 14 and 15.
SCIENCE: One year's work, with a weekly average of at least three periods of class work, in one of the following: Chemistry, Physics, Physiology, Botany, Zoölogy, Geology, Drawing.

This examination group admits to the courses leading to the degree of Bachelor of Science: the General Course in Science, the Special Courses in Biology and Chemistry, and the Medical Preparatory Course. These courses are intended primarily for graduates of English high schools who have a special object before them lying along the lines laid out for these courses.

**For Candidates for Engineering Courses.**

Candidates for the courses leading to the degrees of Bachelor of Electrical or Civil Engineering will be required to take the subjects comprised in

**Group VI.**

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or FRENCH, 14.
ENGLISH, 22.
DRAWING, 26.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be can-

didates for admission to the Freshman class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Registrar of the College) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course. Certificates must be in the hands of the Registrar at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts, or for that of Bachelor of Philosophy, or for that of Bachelor of Science, according to the examination group upon which they are admitted to the college. In any case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation, while the courses leading to the degree of Bachelor of Science consist mainly of prescribed work on special lines. Those who have fulfilled the requirements for the degree of Bachelor of Philosophy may obtain the degree of Bachelor of Arts on the satisfactory completion of twenty-four term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the courses students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accom-

plished by the student in regular standing counts toward the attainment of the degree. The period within which the degree may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS

### For A. B. and Ph. B.

[NOTE. — Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of program hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows: —

| | Term Hours. |
|---|---|
| LANGUAGES (Latin, Greek, French, German; each student to take *three*) | 18 |
| ENGLISH (Rhetoric, Composition, Themes, Oratory) | 12 |
| MATHEMATICS | 6 |
| SCIENCE (Physics, Chemistry, Biology; each student to take *one*) | 6 |
| MENTAL AND MORAL SCIENCES (Philosophy, History, Political Science; each student to take *one full or two half* subjects) | 6 |
| PHYSICAL TRAINING | 2 |
| A total of | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the

prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student will make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B asa n average for his entire work.

**Summary.**

| | | | |
|---|---|---|---|
| Prescribed work | 50 | term | hours. |
| Major department | 18 | " | " |
| Collateral subjects | 18 | " | " |
| Free electives | 42 | " | " |
| | 128 | " | " |

**For S. B.**

The requirement for the degree of Bachelor of Science is the satisfactory completion of one hundred and twenty-eight term hours, according to the programs for the General Science Course, Special Courses in Biology and Chemistry, and Medical Preparatory Course, on pages 83 to 86. The highly specialized character of these courses leaves only a small allowance of time outside the prescribed subjects, but there is a limited amount of time at the disposal of the student for free election.

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments: —

| | |
|---|---|
| ENGLISH LITERATURE. | HISTORY. |
| FRENCH. | POLITICAL SCIENCE. |
| GERMAN. | MATHEMATICS. |
| LATIN. | PHYSICS. |
| GREEK. | CHEMISTRY. |
| PHILOSOPHY. | BIOLOGY. |

ENGINEERING.

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given in 1895–6. In many cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts follows the subjoined statements of the several departments. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

PROFESSOR SHIPMAN.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all, but a list is furnished from which each writer may select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification, this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. A text-book is used as the basis of instruction, and is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition.

SUBJECTS.

**1.** — Composition. Lectures, discussion of papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

**2.** — Rhetoric, with practical exercises. Second year. *Monday, Wednesday, and Friday at* 10.45 *(first half-year)*. MR. WHITTEMORE.

**3.** — Composition and Themes. Second year. *Monday, Wednesday, and Friday at* 10.45 *(second half-year)*. MR. WHITTEMORE.

**4.** — Principles and Practice of Debate. Open to students who have completed 1, 2, and 3 or 5. *Tuesday and Thursday at* 8.45 *(first half-year)*. PROFESSORS SHIPMAN AND MAULSBY.

**5.** — Daily Composition. Elective or optional, with 4. *Five themes weekly (either half-year)*.

PROFESSOR SHIPMAN AND MR. WHITTEMORE.

Subjects 1, 2, 3, and 5 or 4 will constitute, with Oratory 1, the prescribed work in English.

**6.** — Rhetoric (advanced course). The Principles of Style. Elective for students who have completed with credit the prescribed work in English, and to such others as may be approved by the instructor. *Monday, Wednesday, and Friday at* 11.45 *(first half-year)*.

PROFESSOR SHIPMAN.

**7.** — Composition (advanced course). Elective for students who have completed the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

## ORATORY.

PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out, and, so far as possible, remedies suggested. The required course aims at reading that shall be intelligent, natural, and forcible. Attempt is made to develop, both in voice and gesture, spontaneous expression from the mental side. In the elective courses, opportunity is given for individual presentation of selections from standard literature and for practice in debate on subjects of current interest. Throughout the work the student meets the instructor personally, for rehearsal and criticism.

### SUBJECTS.

**1.** — The Principles of Oratory Exemplified in Practice. Class exercises in vocalization and gesture. *Tuesday at* 8.45.

**2** (*a*). — Study of Selections from Shakespeare and Browning. Individual presentation of standard poetry and prose. *Tuesday at* 2.

[**2** (*b*). — Study of Selections from the Great Orators. Individual presentation of forensics. *Thursday at* 2.]

**3.** — Practice in Debate. (In continuation of English 4.) *Thursday at* 8.45 (*second half-year*).

## ENGLISH LITERATURE.

PROFESSOR MAULSBY.

The study of our literature offers opportunity for acquaintance with the work of selected writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published criticism that

clusters about the great names are not neglected, although given a subordinate place. The method pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. The library contains multiple copies of many of the authors read. It is expected that students will take the subjects in the order of the classifying numbers. Any departure from this order is to be made only by special arrangement. Subjects in brackets will be given during 1896–7.

**1.** — General View of the Whole Field. Lectures, examinations, and required reading. *Monday at* 10.45.

PROFESSOR MAULSBY, MR. WADE, MR. WHITTEMORE.

**2.**—American Literature. Lectures, required reading, special topics, essays. *Monday, Wednesday, and Friday at* 3. PROFESSOR MAULSBY.

**3.** — Study of an Author.

[ (*a*) Shakespeare. Reading of twenty-five plays, lectures, examinations, brief critical essays. *Monday, Wednesday, and Friday at* 9.45 (first half-year). PROFESSOR MAULSBY.

*Tuesday, Thursday, and Saturday at* 8.45 (*second half-year*).

MR. WHITTEMORE.]

(*b*) Chaucer. Study of forms and pronunciation, reading of selections from the Canterbury Tales and the minor poems, essays. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*).

PROFESSOR MAULSBY.

[(*c*) Browning. Poems, collateral reading, lectures, brief critical essays. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).

MR. WHITTEMORE.]

**4.** — Study of a Period.

(*a*) The Origins. Reading of selections in Old English, prose and poetry, with so much attention to grammar as will serve intelligent appreciation of the text. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

(*b*) Poetry and Drama of the Restoration. Lectures, parallel reading, essays. *Monday, Wednesday, and Friday at* 3 (*second half-year*). MR. WADE.

[(*c*) The English Romantic Movement. Lectures, copious reading, individual treatment of authors not studied in the class. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*).

PROFESSOR MAULSBY.]

**5.** — English Versification. Study of poetic forms and practice in poetic composition. *Friday at* 4. PROFESSOR MAULSBY.

**6.** — Development of a Literary Form, as (*a*) the drama, (*b*) the novel, (*c*) the lyric.

[(*b*) Development of the English Novel. Much previous reading is taken for granted, and much required. Critical essays. *Wednesday at* 10.45. PROFESSOR MAULSBY.]

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

SUBJECTS.

**1.** — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises; Bernhardt's Im Zwielicht, II; Riehl, Burg Neideck; Buchheim's Balladen und Romanzen. *Tuesday, Thursday, Saturday, at* 9.45.
PROFESSOR FAY.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

**2.** — Intermediate German. Review of grammatical principles, especially of syntax, with advanced exercises in composition; Scheffel, Ekkehard (Wenckebach edition); Freytag, Der Rittmeister von Alt-Rosen, Aus dem Staat Friedrichs des Grossen; Buchheim's Deutsche Lyrik. *Tuesday, Thursday, Saturday, at* 8.45. MR. O. F. LEWIS.

German 2 is intended for those who have passed the examination in Elementary German. It is possible for a student who has excelled in the work of German 1, and who shall have done a prescribed amount of outside reading, to omit this course and enter German 3.

**3.** — First half-year. Work introductory to classic authors. Lessing, Minna von Barnhelm; Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. Second half-year. Work in the rapid reading of recent prose authors; one theme. *Monday, Wednesday, Friday at* 9.45. PROFESSOR FAY.

Students who have passed their entrance examinations in Intermediate German continue their work in German 3. Those by whom a knowledge of the classic authors is especially desired may substitute the second half-year of German 4 for that of this subject. German 3 may be taken as an additional half-subject by more advanced students.

**4.** — Schiller and Goethe: Egmont, Maria Stuart, Wallenstein, with collateral readings in historical prose; two themes. *Tuesday, Thursday, Saturday, at* 11.45. PROFESSOR FAY.

German 4 is taken by those who pass the entrance examination in Advanced German. The last half-year's work in German 3 may be taken collaterally as a half-subject.

**5.** — Lessing and Goethe: Nathan der Weise, Laocoön: Tasso, Iphigenie auf Tauris, Faust, with collateral reading, especially from Düntzer's Commentaries. *Monday, Wednesday, Saturday, at* 11.45.
PROFESSOR FAY.

**6.** — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. A thesis is required of candidates for honors. *Monday, Wednesday, Friday, at* 10.45.
PROFESSOR FAY.

## FRENCH.

PROFESSOR FAY AND PROFESSOR LEWIS.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

1. — Elementary French. The essentials of Grammar, with composition; Rollins's French Reader; Masson's French Classics, Vol. V.; during second half-year, collateral reading of short prose works. *Tuesday, Thursday, Saturday, at* 9.45. PROFESSOR LEWIS.

French 1 is the equivalent of the entrance requirement in Elementary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax; Exercises in Composition; Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière; Selections from Super's Readings from French History; Racine, Athalie; collateral reading of standard prose works. *Tuesday, Thursday, Saturday, at* 8.45.

PROFESSOR LEWIS and MR. WADE.

French 2 is intended for those who have passed the entrance examination in Elementary French. It is possible for a student who has excelled in the work of French 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

3. — First half-year. Introductory work in Seventeenth Century Classics. Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Second half-year. Course for the rapid reading of recent authors. *Monday, Wednesday, Friday, at* 8.45.

PROFESSOR LEWIS and MR. O. F. LEWIS.

Students who have passed the entrance examination in Intermediate French continue their work in French 3. French 3 may be taken as an additional half-subject by more advanced students.

4. — First half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII$^{e}$ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. Second half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. *Monday, Wednesday, Friday, at* 8.45. PROFESSOR FAY.

French 4 is taken by those who pass the entrance examination in

Advanced French. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

**5.** — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Hugo, Lamartine, de Musset, Balzac, George Sand, Sainte-Beuve, Taine, and selections from contemporary authors. *Monday, Wednesday, Friday, at* 3. PROFESSOR LEWIS and MR. WADE.

[**6.** — Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. A thesis is required of candidates for honors. PROFESSOR FAY.]

## ITALIAN.

PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

SUBJECT.

**1.** — Grandgent's Grammar and Composition; De Amicis, La Vita Militare; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

PROFESSOR DEARBORN.

The work in this department is arranged and conducted with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation of Latin, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, acquired partly by reading Latin authors, partly by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early part of the work the forms and construction of

the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The advanced work is especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays, read and criticised before the class.

SUBJECTS.

**1.** — Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those choosing Latin as a prescribed language.

**2.** — Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR DEARBORN.

**3.** — Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR DEARBORN.

**4.** — Cicero; Terence; Catullus; Quintilian. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR DEARBORN.

**5.** — Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when elected should be taken simultaneously with it in the Freshman year.

**6.** — Cicero (Brutus and Second Philippic); Plautus or Terence; Lucretius (Books I.–III.); Tacitus (Dialogue or Annals); Comparative Grammar of Greek and Latin (King and Cookson or Henry); History of the Latin Language and Literature. *Three hours a week.* PROFESSOR DEARBORN.

This subject is for graduate students.

## GREEK.

PROFESSORS SCHNEIDER AND GRAVES.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

### SUBJECTS.

**1.** — Elementary. Goodwin's Grammar; White's Beginner's Book; Xenophon (Anabasis or Hellenica); Homer (Iliad I–III); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR GRAVES.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

**2.** — Xenophon (Memorabilia or Cyropœdia); Herodotus (Books VI and VII); Homer (Phæacian Episode of the Odyssey); Sophocles (Antigone); Greek Composition. *Monday, Wednesday, and Friday at* 2. PROFESSOR GRAVES.

Greek 2 is the course for students entering with Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and

daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

[**3.** — Lysias (Selections); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.]

**4.** — Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.

Greek 3 and 4 are offered in alternate years and are open to those who have taken Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and modes and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

**5.** — Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

**6.** — Plato (Symposium); Aristotle (Ethics, Books I–IV, or Politics); reading at sight in Herodotus and Lucian. *Monday, Wednesday and Friday at* 2. PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

**7.** — Topics in Greek History: reading at sight in Homer and Euripides; Greek Composition. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR GRAVES.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

**8.** — Demosthenes (Private, Hellenic, Olynthiac, and Philippic Orations); Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.

[**9.** — Study of the Sources of Greek History; critical reading of

Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

PROFESSOR GRAVES.]

[10. — Plato (Gorgias, Phaedo, Republic I–V); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 8 being the subject for 1895–96. These subjects are intended for those wishing to pursue graduate work in Classical Philology. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek history, and in 10 on the life, works, style, and philosophy of Plato.

## HEBREW.

PROFESSOR CURTIS.

Two subjects, each occupying two hours a week for a year, are offered in Hebrew, enabling the student to obtain a knowledge of the rudiments of the language, and, if desired, to pursue it further and obtain some knowledge of the literature. It will be noticed that these subjects are given in alternate years.

SUBJECTS.

1. — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism. *Tuesday and Thursday at* 3. PROFESSOR CURTIS.

[2. — Advanced Hebrew; Readings from Ancient, Middle, and Late Hebrew; Discussion of the Critical Questions involved. *Tuesday and Thursday at* 3. PROFESSOR CURTIS.]

## PHILOSOPHY.

PROFESSOR SHIPMAN.

Together with historical and critical work in Philosophy, this department includes Logic, Psychology, and Ethics. Students choosing it as their major department will be expected to take at least three term hours in each of these subjects, and to make up three years of continuous work. Half subjects are offered for the most part, and the preparatory subjects are so far complete that any of them may be taken by students not intending to pursue special studies in the department. The second

term in Psychology does not pre-suppose the first, but if both are taken, the order given is advised. The first subject in Logic includes an elementary consideration of inductive reasoning.

The work in Ethics embraces the study of ethical theory and practice. In addition to recitations from the text-book, students conduct their own investigations, under the direction of the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of modern ethical doctrines.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times.

Lectures and criticisms in the class-room supplement the students' personal investigations.

SUBJECTS.

**1.** — The History of Philosophy. First half-year: the pre-Socratic Greeks; Socrates, Plato, and Aristotle; the Stoics and Epicureans. Second half-year: the Period of Enlightenment from Locke to the death of Lessing (1689–1781); German Philosophy from Kant to Hegel (1781–1820), with special attention to Kant and Schopenhauer. Lectures, theses, and wide reading. *Monday, Wednesday, and Friday at* 3. MR. CUSHMAN.

This course is an introduction to Philosophy and is designed for beginners. It is extremely advisable that the student should understand the literature of Philosophy before taking any other course in constructive or critical Philosophy.

**2.** — Psychology. Manifestations of Mind through Consciousness. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

**3.** — Physical Psychology. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

The first subject presents Psychology in its historical relations, studies the manifestations of mind through consciousness, in the

manifold products of individual and collective activity, and prepares the way for Philosophy. The second deals with the methods and results of recent psychological investigation, with Psychology as a branch of Physics.

**4.** — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

**5.** — Logic (advanced course), especially Inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 4 is open only to such students as have satisfactorily completed 3. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

**6.** — Ethics. Elementary principles; discussion of ethical theories; practical questions. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

**7.** — Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR TOUSEY.

Philosophy 6 follows 5 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 5.

**8.** — The Philosophy of Religion. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR KNIGHT.

[**9.** — Metaphysics; the fundamental problems of Philosophy considered constructively; problems of knowledge, nature, self and self-consciousness, theism, teleology, freedom, and causation; realism and idealism. Lectures, theses, and critical discussion in the class of the text of Deussen's Elements of Metaphysics and Bradley's Appearance and Reality. *Monday, Wednesday, and Friday at* 2 (*first half-year*). Will be given in 1896–97. MR. CUSHMAN.]

[**10.** — Descartes, Leibnitz, and Spinoza. Critical and expository study of the authors, lectures, readings of the text, theses. MR. CUSHMAN.]

[**11.** — Kant and Schopenhauer; review of the Romance Period. Critical study of the authors, lectures, readings, and theses. Open to students who have taken a half-year, at least, in Philosophy 1. *Monday, Wednesday, and Friday at* 2 (*second half-year*). MR. CUSHMAN.]

[**12.** — English Philosophy from Hobbes to Hume. Method of work

similar to 10 and 11. Open to students who have taken a half-year, at least, of Philosophy 7. *Monday, Wednesday, and Friday at* 2 (*second half-year*). MR. CUSHMAN.]

Philosophy 11 and 12 are given in alternate years. One of these subjects will be given in 1896–97.

## HISTORY.

MR. START.

The department for the present year offers a course in mediæval history, with introductory work intended to give the student a general knowledge of the significance, sources, and methods of history, and of the large facts in the early development of civilization and their connection with later history. The later history of Europe is the subject of special study, and all of this work leads up to a careful study of the history and constitutional growth of the United States. The essential unity of history is kept constantly in view, as well as the bearing of the experience of the past upon the conditions and problems of to-day, especially in our own country. Much of the instruction is by lectures, but independent work on the part of the student is sought through the study of special topics, references for parallel readings, the preparation of theses, and by general class discussions. The aim is not so much the accumulation of a great mass of facts, as an adequate comprehension of the meaning of significant historical events, and of the method to be employed in collating and using them.

Major students in History should acquire a working knowledge of German and French, at least, among the languages. Psychology and Political Science are important collaterals. Knowledge of Literature, Philosophy, and of the natural sciences, especially of Biology, is also of great value, and in some cases requisite for successful historical investigation.

### SUBJECTS.

I. — Mediæval Europe; historical method; introductory study of the beginnings of History. Lectures, topical work, and theses. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).

MR. START.

History 1 is introductory to all succeeding subjects in History, and must be taken by students wishing to go on with the latter. It is intended to give a general knowledge of the nature and progress of civilization through the Middle Ages, and the means by which it is studied. Complete in itself, it is the foundation for special study of limited periods. It is open for election by all students who have passed the entrance examinations in History. It will not be accepted for an advanced degree.

**2.** — European History since 1648. The political revolution and formation of modern states. Topical study, lectures, and theses. Open to students who have completed History 1. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). MR. START.

[**4.** — American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, parallel readings, theses, and topical work. Open to students who have taken History 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. START.]

**5.** — Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources, and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 11.45. MR. START.

History 4 and 5 form a connected study of the history of our own country from the opening of the New World to the present time. While this is not made a necessary condition, it is desirable that they be preceded by History 2. History 4 will not be a prerequisite for this subject in 1896–97.

**6.** — The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR KNIGHT.

**9.** — Seminary in American History. Research work with the sources. Open to major students in History who have completed twelve term hours of work in the department. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.* MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and obtaining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library.

## POLITICAL SCIENCE.

PRESIDENT CAPEN.

In this department are included Ancient and International Law and Economics. In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics. Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

Special work will be arranged in connection with some of the problems of government for those who take Political Science as a major subject, and who have completed 1, 2, and 3.

SUBJECTS.

1.—Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Tuesday, Thursday, and Saturday at* 8.45.

PRESIDENT CAPEN.

2. — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PRESIDENT CAPEN.

3. — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PRESIDENT CAPEN.

4. — Special work in problems of Government for students electing Political Science as a major department. PRESIDENT CAPEN.

## MATHEMATICS.

PROFESSOR BROWN.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

### SUBJECTS.

1. — Bowser's College Algebra; Solid Geometry; Bowser's Plane Trigonometry. Applications of Plane Trigonometry. *Monday, Wednesday, and Friday at* 8.45 (Division I). MR. WREN. *At* 9.45 (Division II). PROFESSOR BROWN.

**2.** — Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 *(second half-year).* PROFESSOR BROWN.

**3.** — Bowser's Analytic Geometry. Open to students who have taken 1. *Monday, Wednesday, and Friday at* 11.45 *(first half-year).* PROFESSOR BROWN or MR. WREN.

[See Engineering Courses.]

**4.** — Spherical Trigonometry; Projections of Triangles; use of Richards's Manual with the sphere. Open to students who have had 1. *(First half-year.)* PROFESSOR BROWN.

**5.** — Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 *(second half-year).* PROFESSOR BROWN.

**6.** — Differential and Integral Calculus, Osborne's. *Three hours a week (second half-year).* MR. WREN.

[See Engineering Courses.]

**7.** — Differential and Integral Calculus continued. *Two hours a week (first half-year.)* MR. WREN.

[See Engineering Courses.]

**8.** — Differential and Integral Calculus (advanced course). *Two hours a week (second half-year).* PROFESSOR BROWN or MR. WREN.

**9.** — Weld's Theory of Determinants; Hanus's Elements of Determinants. *Three hours a week (first half-year).* MR. WREN.

**10.** — Differential Equations. *Two hours a week (first half-year).* PROFESSOR BROWN.

[See Engineering Courses.]

**11.** — Method of Least Squares. Comstock and Merriman. *Two hours a week (second half-year).* PROFESSOR BROWN.

*[For further subjects essentially mathematical, see subjects* 1 *and* 4 *in the department of Drawing, and subjects* 1, 3, *and* 8 *in the department of Civil and Mechanical Engineering.]*

## PHYSICS.

PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various

phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

SUBJECTS.

1. — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

2. — Electricity and Magnetism; Heat; Light; work in Laboratory. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DOLBEAR.

3. — Advanced Studies in Electricity, Heat, and Light, with experimental work in each. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR DOLBEAR.

**4.** — Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week (second half-year).* MR. MYRICK.

**5.** — Electricity: Theory of Measurements. *Three hours a week.* Electrical Laboratory: Simple Measurements and Tests. *Two hours a week.* MR. MYRICK.

**6.** — Relation of Physics to Sociology. Lectures. *Tuesday and Thursday at 2 (first half-year).* PROFESSOR DOLBEAR.

**7.** — Spencer's First Principles. *Tuesday and Thursday at 2 (second half-year).* PROFESSOR DOLBEAR.

## CHEMISTRY.

PROFESSOR MICHAEL AND ASSISTANT PROFESSOR DURKEE.

The work in the department begins with Chemistry 1, which is open for election by the students of the courses in Liberal Arts, and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, and the student will have an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examinations. An opportunity to continue the study of theoretical and inorganic chemistry is afforded by subjects 11 and 13. In the first course the current theoretical views, and the chemistry of the rarer elements and compounds will be considered and discussed. Facility is given to those who wish to supplement the above course of lectures with laboratory practice by taking subject 13, when the student will undertake some of the more difficult inorganic experiments and preparations; thus obtaining greater experience in chemical experimentation. The last two subjects may be taken as graduate work.

The instruction in Qualitative Analysis extends through a

year, and consists of two subjects (2 and 3) taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly a large number of mixtures and minerals. Blow-pipe Analysis (subject 6) is intended to teach the use of the blow-pipe in chemistry, together with the tests that are of special value in determinative mineralogy. Quantitative Analysis is mainly taught by laboratory practice, in order that the student may attain that skill in manipulation which is necessary for this kind of work. In subject 4 enough work is given to enable the student to analyze the simpler salts and minerals, and in the advanced subject 5, complete analyses of more complicated minerals, ores, commercial and food products, etc., are required. The analysis of organic substances is included in subject 5. Gas analysis (subject 9) is taught by lectures and laboratory work, principally in the use of technical methods. Assaying (subject 7) is adapted to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such a thorough theoretical and practical knowledge as to prepare him for analytical work of any description. A course of lectures in Metallurgy (subject 8), with recitations, is offered, which is intended to give the student a general idea of fuels, ore dressing, refractory building materials, and the more important technical methods of extracting iron, copper, and silver.

The study of Organic Chemistry begins with a course of lectures, illustrated by experiments and recitations, which cover the general principles, methods, and description of the most important organic compounds. For those who wish to specialize in this science an opportunity is given by subject 12, in which by lectures the underlying theories of organic chemistry will be fully discussed and the relations between them and organic reactions explained. The laboratory practice in organic chemistry (subject 14) may be begun at the same time as sub-

ject 10 and continued with 12. It includes the methods for determining the physical properties and molecular weights of organic substances and the preparation of compounds. When taken in connection with subject 12, one or more of the most important chemical researches will be repeated by the student. The subjects 12 and 14 may be taken as graduate work.

Subjects 11, 12, 13, and 14 are especially designed to lead up to research work in chemistry, and students who have taken them, with subject 5, are prepared to enter on this line of advanced work. Ample facilities are offered for the successful prosecution of investigations in inorganic and organic chemistry.

Two laboratory hours are equivalent to one term hour, except in the special course in Chemistry, for the degree of Bachelor of Science, in which three hours of work in the laboratory count as one term hour. The quantitative and organic laboratories are open from nine to five o'clock daily, Saturday afternoons excepted.

SUBJECTS.

1. — General Chemistry. Lectures, recitations, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

2. — Qualitative Analysis. Basic Analysis. *Lectures, laboratory work, and recitations on Tuesday and Thursday from 2 to 5 (first half-year).* ASSISTANT PROFESSOR DURKEE.

3. — Qualitative Analysis. Acids; Analysis of Salts, Commercial and Natural Products. *Lectures, laboratory work, and recitations on Tuesday and Thursday from 2 to 5 (second half-year).* ASSISTANT PROFESSOR DURKEE.

4. — Quantitative Analysis. Gravimetric and Volumetric Analysis; Analysis of Minerals. *Lectures and laboratory work. Three hours a week.* DR. HIGBEE.

5. — Quantitative Analysis (advanced course). Analysis of Minerals, Ores, Water, Food Products, Organic Analysis, etc. *Laboratory work. Three hours a week.* DR. HIGBEE.

6. — Blow-pipe Analysis. Open to students who have taken 1, 2, and 3. *Lectures and Laboratory work. Three hours a week (second half-year).* ASSISTANT PROFESSOR DURKEE.

7. — Fire Assay. Open to students who have taken 1, 2, 3, and 4. *Three hours a week (second half-year).* MR. LEIGHTON.

**8.** — Metallurgy. Lectures and recitations. Open to students who have taken 1. *Three hours a week (second half-year).*

ASSISTANT PROFESSOR DURKEE.

**9.** — Gas Analysis. Lectures and laboratory work. Open to students who have taken 1, 2, 3, and 4. *Three hours a week (first half-year).* DR. HIGBEE.

**10.** — Organic Chemistry. Lectures and recitations. Open to students who have taken 1. *Three hours a week (second half-year).*

DR. BUCHER.

**11.** — Theoretical and Inorganic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1, 2, 3, and 4. *Three hours a week (first half-year).* PROFESSOR MICHAEL.

**12.** — Organic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1, 2, 3, 4, and 6. *Three hours a week (second half-year).* PROFESSOR MICHAEL.

**13.** — Laboratory work in Inorganic Preparations. *Hours to be arranged by the instructors.* PROFESSOR MICHAEL and DR. BUCHER.

**14.** — Laboratory work in Organic Analysis; Determination of Physical Constants and Molecular Weights; Preparation of Organic Compounds. *Hours to be arranged by the instructors.*

PROFESSOR MICHAEL and DR. BUCHER.

**15.** — Original Investigations in Chemistry. *Hours to be arranged by the instructor.* PROFESSOR MICHAEL.

**16.** — Readings in German Chemical Works and Journals. Open to students who have taken German 1 and 2. *Two hours a week (first half-year).* DR. BUCHER.

**17.** — Discussions on chemical subjects and recent investigations. *One hour a week.*

## BIOLOGY.

PROFESSOR KINGSLEY.

The work in Biology is differentiated in two lines: one for those desiring a general knowledge of the subject, and one for those who need more thorough work. The first line embraces Biology 1, and may, upon election, be followed by subjects 4, 5, 6, and 7. The other course begins with Biology 2 and 3 and is required of all major students as well as of those candidates for the degree of S. B. in the Biology, Medical Preparatory, and General Science courses. These are followed by subjects 5 to 9, subject 8 involving the preparation of a dissertation. In-

struction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems.

The equipment of the department is good. There are three well lighted laboratories furnished with every requisite for good work, including microscopes, microtomes, reagents, etc., as well as abundant material for illustration and dissection. One of the laboratories is devoted to elementary biology, one to advanced undergraduate work, and one to graduate students. There is also a department library containing 786 volumes and 1,400 pamphlets, while the college library contains the proceedings of many learned societies, both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to library facilities unequalled in any other part of America.

SUBJECTS.

1. — General Biology. Lectures, *Tuesday and Thursday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is intended for those who elect their required year of science work in this department and for candidates for the degree of S. B. in chemistry.

2. — General Biology. Lectures, *Monday and Friday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This course and its continuation, No. 3, is required of all students electing Biology as their major, and also of candidates for the degree of S. B. in the General Science, Biological, or Medical Preparatory courses.

3. — General Biology. Lectures, *Monday and Friday at* 4; laboratory work (4 hours), *Monday, Wednesday, and Friday from* 2 *to* 4.

PROFESSOR KINGSLEY.

4. — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

The students in the Medical Preparatory course take this subject at the Medical School.

Subjects 1 to 4 will not be accepted as work for advanced degrees.

**5.** — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*
PROFESSOR KINGSLEY.

**6.** — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

**7.** — The History of Zoölogy. One lecture a week for the first half-year. PROFESSOR KINGSLEY.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom, and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

**8.** — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

**9.** — General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Hours to be arranged.* PROFESSOR KINGSLEY.

Subjects 5 to 9 are intended for both graduates and undergraduates.

There is required from all students taking Laboratory Courses, a laboratory fee of $2.00 per term, payable to the Bursar of the College in advance.

## GEOLOGY.

PROFESSOR MARSHALL.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals systematically arranged in wall-cases, is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second

half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ*.

SUBJECTS.

1. — Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

2. — Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

1. — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year*). PROFESSOR DOLBEAR.

## DRAWING.

PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the stu-

dent is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, together with the elements of kinematics, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used. A progressive course in design is pursued preparatory to and in connection with thesis work.

SUBJECTS.

1. — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week (second half-year).*
PROFESSOR ANTHONY, MR. DANIELS.

2. — Technical Sketching and Lettering. *Two hours a week (first half-year).* PROFESSOR ANTHONY, MR. DANIELS.

3. — Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* MR. DANIELS.

4. — Elements of Mechanism. *Two hours a week (first half-year).*
MR. SANBORN.

5. — Machine Drawing; Gearing, Elements of Design. *Two hours a week for the year.* PROFESSOR ANTHONY.

6. — Topographical Drawing, with Field Work, Chain, Compass, Level, and Transit. *Three hours a week for the year.*
MR. DANIELS.

## CIVIL AND MECHANICAL ENGINEERING.

PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by

students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

SUBJECTS.

**1.** — Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week (first half-year).*
MR. DANIELS.

**2.** — Topography. Lectures, recitations, drawing, and field practice. *Two hours a week (first half-year).* MR. DANIELS.

This subject must be preceded by 1.

**3.** — Elementary Mechanics. *Three hours a week (second half-year).*
MR. SANBORN.

**4.** — City and Mining Surveying. Recitations, field and office work. *Three hours a week (second half-year).* MR. DANIELS.

**5.** — Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week (first half-year).* MR. DANIELS.

Subjects 3 and 4 must be preceded by 1 and 2.

**6.** — Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week (first half-year).*
MR. SANBORN.

**7.** — Thermo-dynamics. *Three hours a week (second half-year).*
MR. SANBORN.

**8.** — Applied Mechanics. *Three hours a week (second and first half-years).* PROFESSOR BRAY.

Subjects 6 and 7 must be preceded by Calculus.

**9.** — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Five hours a week (first half-year); three hours a week (second half-year).*
PROFESSOR BRAY.

This must be preceded by Mechanical Drawing and Engineering 5, 6, and 7.

**10.** — Roads and Railroads, to be taken with 4. *Three hours a week (first half-year); two hours a week (second half-year).* PROFESSOR BRAY.

**11.** — Hydraulics. *Three hours a week (second half-year).* PROFESSOR BRAY.

**12.** — Bridges and Roofs. *Two hours a week (second half-year).* MR. DANIELS.

**13.** — Masonry Construction. *Three hours a week (second half-year).* PROFESSOR BRAY.

Subjects 10, 11, and 12, must be preceded by 7.

**14.** — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## ELECTRICAL ENGINEERING.

PROFESSOR HOOPER.

To students in the College of Liberal Arts who may desire to elect advanced work in Electricity, the following subjects are open: Subjects 1, 2, and 3 require a good working knowledge of Algebra and Trigonometry, while 4 requires some acquaintance with Calculus and Differential Equations.

### SUBJECTS.

**1.** — Dynamo Electric Machinery. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

**2.** — Electrical Calculations. *Two hours a week (second half-year).* PROFESSOR HOOPER.

**3.** — Electrical Laboratory (advanced course). *Three hours a week for the year.* PROFESSOR HOOPER.

**4.** — Electricity (advanced work). Alternating currents. *Four hours a week (first half-year); three hours a week (second half-year).* PROFESSOR HOOPER.

## MUSIC.

PROFESSOR LEWIS.

The department offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The courses in Harmony and in General History of Music may well be taken by students who wish to cultivate their appreciation of music, but have no intention of preparing themselves for professional work in the art.

### SUBJECTS.

1. — Harmony. Lectures and practical work, based on Jadassohn's Manual of Harmony. Collateral reading concerning the lives of Bach, Händel, Haydn, Mozart, and Beethoven. Three hours a week for the year. *Tuesday at* 3, *Thursday from* 2 *to* 4. PROFESSOR LEWIS.

An elementary knowledge of piano playing is required of those who take this subject.

[2. — Counterpoint, Simple and Double. Lectures and practical work, based on the manuals of Jadassohn, Bridge, and others. Collateral reading concerning the lives of Schubert, Schumann, Mendelssohn, Wagner, and Brahms. *Three hours a week for the year.*]

[Will be given in 1896-97.]

A thorough theoretical knowledge of harmony, and much facility in the harmonization of basses and choral melodies, are required of those who take this course. A full equivalent of Music 1 must have been done by students who wish to begin their college work with Music 2.

[3. — Fugue, Canon, Musical Form, and the Elements of Orchestration. Lectures and practical work, with various manuals for class use and reference. *Three hours a week for the year.*]

[Will be given in 1897-98.]

Students who elect this subject must have attained grade A or B in Music 2, and must have given evidence of talent in melodic invention. Those who are admitted to the course are required to attend regularly during the year the public rehearsals or concerts of the Boston Symphony Orchestra, and at least eight concerts of chamber-music, as prescribed by the Instructor.

**4.** — General History of Music from the Earliest Times to the Present Day, with especial attention to the period since the death of Palestrina. Lectures, with various treatises for reference. *Monday, Wednesday, and Friday, at* 10.45. PROFESSOR LEWIS.

[**5.** — Special Studies in Musical History, in Musical Criticism, or in the development of Musical Form.]

[Will be given in 1897–98.]

An equivalent of the work of Music 4 and an ability to read with facility German and French are required of students who elect this subject. The same requirement of concert attendance as that under Music 3 exists also for Music 5. The course may be given in lectures, or may consist of individual work of students under the direction of the Instructor.

[**6.** — The Phenomena of Sound in relation to music and musical instruments. Lectures and experiments. One hour a week for the second half-year. PROFESSOR DOLBEAR.]

[Will be given in 1896–97.]

The first half-year's work in Physics 1 must have been done by those who elect this subject.

## PHYSICAL TRAINING.

MR. DURKEE.

Regular exercise in the gymnasium is required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Courses in Science.

The courses outlined below, in General Science, Biology, Chemistry, and Medical Preparatory studies, lead to the degree of Bachelor of Science, are entered through Entrance Examination Group V, and are intended for graduates of general high schools, who wish to prepare themselves for specialized scientific work. Like the engineering courses, they are placed upon a technical basis, and far less latitude is allowed the student in the choice of subjects than in the courses in Arts and Philosophy, his election being made when the course is chosen. The programs of these courses are given below. Fuller statements of the different subjects will be found under the corresponding numbers in the statements of the Departments of Instruction, pages 51 to 82.

## COURSE IN GENERAL SCIENCE.

### Freshman Year.

*English* (as in Engineering Courses).
*German* 1 or 2.
*French* 2 or 1.
*Physics* 1.
*Biology* 2.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*English* 2 and 3.
*German* 2, or *German* 3 (first half-year), and *Chemical* or *Biological German* (second half-year).
*French* 2 (if German 3 is taken).
*Biology* 3.
*Physics* 2 (first half-year) and 4 (second half-year).
*Mathematics* 1 (taken this year by those entering with French).
*Physical Training.*

### Junior Year.

*German* 3 (first half-year and *Chemical* or *Biological German* second half-year).
*Chemistry* 1.
*Mathematics* 1 (for those entering with German).
*Descriptive Geometry* (second half-year).
*Physiology* (first half-year).
*Embryology* (second half-year).
*Shop Work* (first half-year).
*Mechanics* (second half-year).
*Elective, seven hours.*

### Senior Year.

*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Philosophy* 2 and 3.
*Geology* 1 and 2.
*Systematic Biology* (second half-year).
*Surveying* (first half-year).
*Elective, three hours.*

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## SPECIAL COURSE IN BIOLOGY.

### Freshman Year.

As in the course in General Science.

### Sophomore Year.

*English* 2 (first half-year) and 3 (second half-year).
*German* 2, or *German* 3 (first half-year) and *Biological German* (second half-year).
*French* 2, or *elective six hours*, for those entering with French.
*Biology* 3.
*Chemistry* 1.
*Physical Training.*

### Junior Year.

*German* 3 (first half-year) and *Biological German* (second half-year).
*Physiology* (first half-year).
*Histology* (first half-year).
*Embryology* (second half-year).
*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Elective, eight hours* (*fourteen* for those entering with German).

### Senior Year.

*Geology* 1 and 2.
*General Morphology.*
*Human Anatomy* at Tufts Medical School.
*Special research* in Biology, including *thesis*, twelve hours.
*Elective, five hours.*

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## SPECIAL COURSE IN CHEMISTRY.

### Freshman Year.

*General Inorganic Chemistry.*
*Mathematics* 1.
*German* 1 or 2.
*English* (as in Engineering Courses).
*Physics* 1.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*Qualitative* and *Quantitative Analysis.*
*Organic Chemistry* (second half-year).
*Physical Laboratory* (second half-year).
*English* 2 and 3.
*German* 2, or *French* 1.
*Blow-pipe Analysis* (first half-year).
*Chemical German.*
*Physical Training.*

### Junior Year.

*Advanced Inorganic Chemistry* (first half-year).
*Advanced Organic Chemistry* (second half-year).
*Quantitative Analysis.*
*Biology* 1.
*Physiology* (first half-year).
*Fire Assay* (second half-year).
*Metallurgy* (first half-year).
*Advanced Laboratory.*
*Logic* (second half-year).

### Senior Year.

*Applied Chemistry.*
*Gas Analysis* (first half-year).
*Political Science* 1.
*Research* and *thesis*, five hours (first half-year); nine hours (second half-year).

## MEDICAL PREPARATORY COURSE.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

As in the Special Course in Biology.

### Junior Year.

*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Embryology* (second half-year).
*Philosophy* 2 and 3.
*Shop Work* (second half-year).
*German* 3 (first half-year); *Biological German* (second half-year).
*Elective*, *six hours* (*twelve hours* for those entering with German).

### Senior Year.

*General Morphology*.
*Political Science* 1.
*Ethics*.
*Human Anatomy*, *Histology*, and *Physiology* at Tufts Medical School.
*Elective*, *six hours*.

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years, and leading to the degree of Bachelor of Science.

The course in Electrical Engineering leads to the degree of Bachelor of Science in Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The same degree in Civil or Mechanical Engineering is given on similar conditions to students who have pursued the course in Civil or Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

Modern Languages. — An elementary knowledge of French or German (see pages 40 and 42) is required of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject

is to be met by extra work. The courses in French and German are, in general, similar to those described on pages 55 to 57 (general statement).

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Students in the three branches of Engineering follow the same plan of work for the first two years.

### FRESHMAN YEAR.

#### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. MYRICK and MR. WREN.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Lettering and Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Carpentry; Turning; Pattern-Making. *Two hours a week.* MR. FURBISH.

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

#### Second Term.

**Mathematics.** — Spherical Trigonometry. *Two hours a week.* MR. MYRICK and MR. WREN.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Three hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.* MR. FURBISH.

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

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* See remarks on Modern Languages, page 87.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Three hours a week.* MR. WREN.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**Elements of Mechanism.** — *Two hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. SANBORN.

**Drawing.** — Kinematics. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *One hour a week.* MR. FURBISH.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. MYRICK.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.** — General and laboratory. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much

* See remarks on Modern Languages, page 87.

attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and several motors, including a pair of railway motors; and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

The electrical workshop possesses a fine outfit of machine tools, including planer, shaper, drill, universal milling machine, engine lathes, speed lathes, turret lathe, and grinder. Here is constructed by students much of the apparatus in daily use in the laboratory.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 122).

The plan of work for the Junior and Senior years is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.* *

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* — MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

* See remarks on Modern Languages, page 87.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. *Three hours a week.* PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies

the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college, beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

**4.** — General History of Music from the Earliest Times to the Present Day, with especial attention to the period since the death of Palestrina. Lectures, with various treatises for reference. *Monday, Wednesday, and Friday, at* 10.45. PROFESSOR LEWIS.

[**5.** — Special Studies in Musical History, in Musical Criticism, or in the development of Musical Form.]

[Will be given in 1897–98.]

An equivalent of the work of Music 4 and an ability to read with facility German and French are required of students who elect this subject. The same requirement of concert attendance as that under Music 3 exists also for Music 5. The course may be given in lectures, or may consist of individual work of students under the direction of the Instructor.

[**6.** — The Phenomena of Sound in relation to music and musical instruments. Lectures and experiments. One hour a week for the second half-year. PROFESSOR DOLBEAR.]

[Will be given in 1896–97.]

The first half-year's work in Physics 1 must have been done by those who elect this subject.

## PHYSICAL TRAINING.

MR. DURKEE.

Regular exercise in the gymnasium is required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Courses in Science.

The courses outlined below, in General Science, Biology, Chemistry, and Medical Preparatory studies, lead to the degree of Bachelor of Science, are entered through Entrance Examination Group V, and are intended for graduates of general high schools, who wish to prepare themselves for specialized scientific work. Like the engineering courses, they are placed upon a technical basis, and far less latitude is allowed the student in the choice of subjects than in the courses in Arts and Philosophy, his election being made when the course is chosen. The programs of these courses are given below. Fuller statements of the different subjects will be found under the corresponding numbers in the statements of the Departments of Instruction, pages 51 to 82.

## COURSE IN GENERAL SCIENCE.

### Freshman Year.

*English* (as in Engineering Courses).
*German* 1 or 2.
*French* 2 or 1.
*Physics* 1.
*Biology* 2.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*English* 2 and 3.
*German* 2, or *German* 3 (first half-year), and *Chemical* or *Biological German* (second half-year).
*French* 2 (if German 3 is taken).
*Biology* 3.
*Physics* 2 (first half-year) and 4 (second half-year).
*Mathematics* 1 (taken this year by those entering with French).
*Physical Training.*

### Junior Year.

*German* 3 (first half-year and *Chemical* or *Biological German* second half-year).
*Chemistry* 1.
*Mathematics* 1 (for those entering with German).
*Descriptive Geometry* (second half-year).
*Physiology* (first half-year).
*Embryology* (second half-year).
*Shop Work* (first half-year).
*Mechanics* (second half-year).
*Elective, seven hours.*

### Senior Year.

*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Philosophy* 2 and 3.
*Geology* 1 and 2.
*Systematic Biology* (second half-year).
*Surveying* (first half-year).
*Elective, three hours.*

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## SPECIAL COURSE IN BIOLOGY.

### Freshman Year.

As in the course in General Science.

### Sophomore Year.

*English* 2 (first half-year) and 3 (second half-year).
*German* 2, or *German* 3 (first half-year) and *Biological German* (second half-year).
*French* 2, or *elective six hours*, for those entering with French.
*Biology* 3.
*Chemistry* 1.
*Physical Training.*

### Junior Year.

*German* 3 (first half-year) and *Biological German* (second half-year).
*Physiology* (first half-year).
*Histology* (first half-year).
*Embryology* (second half-year).
*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Elective, eight hours* (*fourteen* for those entering with German).

### Senior Year.

*Geology* 1 and 2.
*General Morphology.*
*Human Anatomy* at Tufts Medical School.
*Special research* in Biology, including *thesis*, twelve hours.
*Elective, five hours.*

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## SPECIAL COURSE IN CHEMISTRY.

### Freshman Year.

*General Inorganic Chemistry.*
*Mathematics* 1.
*German* 1 or 2.
*English* (as in Engineering Courses).
*Physics* 1.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*Qualitative* and *Quantitative Analysis.*
*Organic Chemistry* (second half-year).
*Physical Laboratory* (second half-year).
*English* 2 and 3.
*German* 2, or *French* 1.
*Blow-pipe Analysis* (first half-year).
*Chemical German.*
*Physical Training.*

### Junior Year.

*Advanced Inorganic Chemistry* (first half-year).
*Advanced Organic Chemistry* (second half-year).
*Quantitative Analysis.*
*Biology* 1.
*Physiology* (first half-year).
*Fire Assay* (second half-year).
*Metallurgy* (first half-year).
*Advanced Laboratory.*
*Logic* (second half-year).

### Senior Year.

*Applied Chemistry.*
*Gas Analysis* (first half-year).
*Political Science* 1.
*Research* and *thesis*, five hours (first half-year); nine hours (second half-year).

## MEDICAL PREPARATORY COURSE.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

As in the Special Course in Biology.

### Junior Year.

*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Embryology* (second half-year).
*Philosophy* 2 and 3.
*Shop Work* (second half-year).
*German* 3 (first half-year); *Biological German* (second half-year).
*Elective*, *six hours* (*twelve hours* for those entering with German).

### Senior Year.

*General Morphology.*
*Political Science* 1.
*Ethics.*
*Human Anatomy*, *Histology*, and *Physiology* at Tufts Medical School.
*Elective*, *six hours.*

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years, and leading to the degree of Bachelor of Science.

The course in Electrical Engineering leads to the degree of Bachelor of Science in Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The same degree in Civil or Mechanical Engineering is given on similar conditions to students who have pursued the course in Civil or Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

Modern Languages. — An elementary knowledge of French or German (see pages 40 and 42) is required of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject

is to be met by extra work. The courses in French and German are, in general, similar to those described on pages 55 to 57 (general statement).

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Students in the three branches of Engineering follow the same plan of work for the first two years.

### FRESHMAN YEAR.

#### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. MYRICK and MR. WREN.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Lettering and Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Carpentry; Turning; Pattern-Making. *Two hours a week.* MR. FURBISH.

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

#### Second Term.

**Mathematics.** — Spherical Trigonometry. *Two hours a week.* MR. MYRICK and MR. WREN.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Three hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.* MR. FURBISH.

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

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* See remarks on Modern Languages, page 87.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Three hours a week.* MR. WREN.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**Elements of Mechanism.** — *Two hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. SANBORN.

**Drawing.** — Kinematics. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *One hour a week.* MR. FURBISH.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. MYRICK.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.** — General and laboratory. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much

* See remarks on Modern Languages, page 87.

attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and several motors, including a pair of railway motors; and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

The electrical workshop possesses a fine outfit of machine tools, including planer, shaper, drill, universal milling machine, engine lathes, speed lathes, turret lathe, and grinder. Here is constructed by students much of the apparatus in daily use in the laboratory.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 122).

The plan of work for the Junior and Senior years is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.* *

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* — MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

* See remarks on Modern Languages, page 87.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. *Three hours a week.* PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies

the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college, beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and Lectures. *Three hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.* *

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 87.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; Studies of different Types. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs; in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. PROFESSOR BRAY.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and

constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field-work, and drafting-room practice in plotting from field notes, calculating, laying-out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the classroom of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means

of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requiring, on the part of the students, the application of formulæ to

cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department, page 122. The plan of the last two years of the course is as follows: —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Two hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

* See remarks on Modern Languages, page 87.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.* MR. DANIELS.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of Conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.* MR. DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

**Second Term.**

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Hydraulic Laboratory.** — Measuring Discharges through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Railroads.** — Economic Theory of Railroad Location. *Two hours a week.* PROFESSOR BRAY.

**Bridges and Roofs.** — Theory and Practice of Designing. *Two hours a week.* MR. DANIELS.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per Week. | Must be preceded by |
|---|---|---|---|
| | FIRST TERM. | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Freehand Drawing | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | Rhetoric | 3 | — |
| | SECOND TERM. | | |
| 7 | Mathematics | 2 | 1 |
| 8 | Mechanical Drawing | 3 | 2 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | Rhetoric | 2 | 6 |
| 13 | Mechanics | 3 | 7* |

* May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | FIRST TERM. | | |
| 14 | Analytical Geometry | 3 | 7 |
| 15 | Elements of Mechanism | 2 | 8, 9 |
| 16 | Machine Drawing | 2 | 8, 3 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 13 |
| 20 | Chemistry, General and Laboratory | 3 | — |
| 21 | Surveying | 2 | 7 |
| | SECOND TERM. | | |
| 22 | Calculus | 3 | 14 |
| 23 | Drawing | 2 | 15, 16 |
| 24 | Forging | 2 | — |
| 25 | French or German | 3 | 18 |
| 26 | Rhetoric | 3 | 12 |
| 27 | Physics, Lectures | 3 | 19 |
| 28 | Physics, Laboratory | 3 | 19 |
| 29 | Chemistry, General and Laboratory | 3 | 20 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 30 | Calculus | 3 | E. M. C. | 22 | — |
| 31 | Drawing, Machine | 3 | E. M. | 23 | — |
| 32 | Topography | 2 | C. | 21 | — |
| 33 | French or German | 3 | E. M. C. | 25 | — |
| 34 | Electricity, Recitations | 3 | E. M. C. | 14, 27, 28 | — |
| 35 | Electricity, Laboratory | 2 | E. M. C. | 14, 27, 28 | — |
| 36 | Steam Enginery | 3 | E. M. C. | 27 | — |
| 37 | Qualitative Analysis | 3 | E. M. C. | 29 | — |
| 38 | English Literature | 1 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | 2 | E. M. C. | 30 | — |
| 40 | Vise, and Machine Work | 2 | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 30 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | 2 | E. M. | 34, 35 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 27 | — |
| 45 | Physical Laboratory | 2 | E. M. C. | 34, 35 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 30, 36 | 39 |
| 47 | English Literature | 1 | E. M. C. | 38 | — |
| 48 | Masonry Construction | 3 | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 32 | — |
| | Drawing — Design | 1 | E. M. | 31 | — |

*E. — Electrical. M. — Mechanical. C. — Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing — Design | 2 | E. M. C. | 31, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | 3 | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | 3 | M. | 31, 36, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 59 | English Composition | 1 | E. M. C. | 26 | — |
| 60 | Surveying | 2 | C. | 32 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 30 | — |
| 62 | Drawing — Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | 4 | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | 4 | M. | — | 68 |
| 66 | Laboratory, Hydraulic | – | E. M. C. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 27 | — |
| 68 | Steam Engineering | 3 | M. | 55 | — |
| 69 | Railroads | 2 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 2 | C. | 52 | — |
| 71 | Thesis | – | E. M. C. | — | — |

* E. — Electrical. M. — Mechanical. C. — Civil.

# Buildings and Equipment.

## BUILDINGS.

The college buildings are: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, Dean Hall; the Commons Building, containing the commons dining-hall, the post-office, and rooms for students; and Metcalf Hall, for women students. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains thirty-two thousand six hundred bound volumes, and about fifteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.45 A. M. to 12.45 P. M., and from 2 to 5 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering eight hundred volumes and about fourteen hundred pamphlets.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late P. T. Barnum, who also gave the college a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has just been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During the past year a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, have been placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the Southern and Western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the species in very fine examples. Among those at present dis-

cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department, page 122. The plan of the last two years of the course is as follows: —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Two hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

* See remarks on Modern Languages, page 87.

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2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.
3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.
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The following estimates represent the fixed annual expenses: —

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|---|---|---|
| Tuition | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds | 10.00 | 10.00 |
| Half room-rent | 15.00 | 75.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks), | 126.00 | 180.00 |
| Total | $261.00 | $375.00 |

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THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP, — Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP, — Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP, — Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP, — Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP. — Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP, — Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP, — Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP, — Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP, — Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP, — Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

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THE MARY ANN WARD SCHOLARSHIP, — Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP, — Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE J. D. PEIRCE SCHOLARSHIP, — Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857, — Founded by Heman Allen Dearborn, for the benefit of women students.

TWO STOWE SCHOLARSHIPS, — Two scholarships of one hundred

dollars each for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

TWO SIMMONS SCHOLARSHIPS, — Founded by the will of Robert F. Simmons, of Attleboro, in the names of Mary F. and Robert F. Simmons.

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THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE STOWE SCHOLARSHIP,— Founded by Mrs. Lucy H. Stowe, of Lawrence, for the benefit of women students.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

LOAN FUND FOR WOMEN. — The Women's Universalist Missionary Society of Massachusetts maintains a fund which is loaned to deserving women students, in sums of one hundred dollars, at four per cent. This fund now amounts to about two thousand dollars.

APPOINTMENTS.— The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES.— In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the

class pursuing Latin 2, of the sixteenth section of Chapter X. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent) in a major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In two years preceding graduation, —

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for honors, — Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on pages 40 and 48.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 40 and 48 for the attainment of that degree.

THE DEGREE OF BACHELOR OF SCIENCE will be conferred upon students who shall have completed the General Course in Science, the Special Course in Biology or in Chemistry, or the Medical Preparatory Course, complying in a satisfactory manner with the conditions stated on pages 46 and 83.

THE DEGREE OF BACHELOR OF SCIENCE in Civil Engineering, in Electrical Engineering, or in Mechanical Engineering, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree

of Bachelor of Science in Civil Engineering, Electrical Engineering, or in Mechanical Engineering, after a graduate course of one year in the Engineering Department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 122.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.
FRANK P. GRAVES, A. M., PH. D.

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are: —

| | |
|---|---|
| ENGLISH LITERATURE. | HISTORY. |
| MODERN LANGUAGES. | MATHEMATICS. |
| LATIN. | CHEMISTRY. |
| GREEK. | BIOLOGY. |
| ELECTRICITY. | |

The degree of Doctor of Philosophy is offered in CLASSICAL PHILOLOGY, CHEMISTRY, and BIOLOGY.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

## DEGREES.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions: —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one, or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case

a certain amount of professional study will be assumed, upon which a thesis shall be presented.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF MASTER OF ARTS may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS.*

**English Literature.** — Candidates for the degree of Master of Arts must have taken subjects 1 and 2, with at least six term hours of work in each of the subjects numbered 3 and 4. Subjects 5 and 6, if not previously taken, may be pursued as graduate subjects, but the advanced student will be expected to do work surpassing in quantity and quality that required of undergrad-

* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 51 to 82.

uate students. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results obtained in some special line of investigation in literary history or criticism.

**Modern Languages.** — The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts, who specializes in this department, to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 55 to 58.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

**Latin.** — Candidates for the degree of Master of Arts in Latin must have completed with credit all the subjects named on page 59, except 4 and 6. In subject 4 graduate students will be required to do more work than undergraduates. Subject 6 is intended for those who have taken all the others. The required thesis must embody the result of the special investigation of some author or period, or of some philological or archæological subject.

**Greek.** — Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3. or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates,

or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.** — Every graduate student must have taken History 1, 2, and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on page 65, 5 and 9 will be accepted as part of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.** — Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. Graduate students in Mathematics 2, 3, 4, 5, 6, and 7 will be required to do more advanced work in these subjects, to receive the degree of Master of Arts in Mathematics, than is required of undergraduate students.

**Chemistry.** — Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 10, or their equivalents. Subjects 4, 5, 6, 7, 8, 9, 11, 12, 13, and 14, are offered for graduate students, and satisfactory work must be done in at least five of these subjects. The candidate must present an acceptable thesis and pass satisfactory examinations in all of the subjects studied.

**Biology.** — Candidates for the degree of Master of Arts in Biology must have already done work equivalent to Biology 2, 3, and 4; or lacking that, they must take omitted subjects in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.** — The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Classical Philology.** — Candidates for the degree of Doctor of Philosophy must be able to read Greek and Latin readily at sight, and to use French and German authorities when necessary. They must have completed three years of advanced work, two of them, at least, in residence. The work will include Latin 6, and Greek 8, 9, and 10. Regular work antecedent to these subjects or its equivalent must have been previously accomplished. Candidates must, in the end, pass an examination on the work of the three years, and present a satisfactory thesis on some subject of original research in Classical Philology.

**Chemistry.** — Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1 to 7 inclusive, 9 and 10, or equivalent work. Unless previously qualified, they must take subjects 11, 12, 13, 14, and 17 and devote at least one year to subject 15. Examinations in the above subjects must be satisfactorily passed and a thesis embodying an original investigation in Chemistry must be presented.

A well equipped laboratory is open to graduate students who

may wish to pursue special lines of research, and the department is prepared to offer every facility for the encouragement of original investigations.

**Biology.** — Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station. They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY. — In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History subjects upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He

may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 113 applies to all students of the College, graduate as well as undergraduate.

# THE DIVINITY SCHOOL

# Faculty of the Divinity School.

ELMER H. CAPEN, D. D., *President.*
*In charge of Political Economy.*

CHARLES H. LEONARD, D. D., *Dean.*
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D. D.
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A. M., B. D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D. D., *Secretary.*
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A. M., B. D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A. M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A. M., B. D.
*Woodbridge Professor of Applied Christianity.*

ANSON B. CURTIS, PH. D.
*Professor of Hebrew.*

## NON-RESIDENT LECTURERS.

HENRY I. CUSHMAN, D. D.
*Lecturer on Methods of Biblical Study.*

JOSEPH K. MASON, D. D.
*Lecturer on Preachers and Preaching.*

F. W. HAMILTON, A. M.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B. D.
*Lecturer on Character and the Ministry.*

For Students of the Divinity School, see the Register, pages 29 and 30.

For the Calendar, see pages 4 and 5.

# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium, are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

They are also required to pass a satisfactory examination in

Greek, Roman, English, and American History; in Rhetoric; in English Literature and in English Grammar and Composition, in which the requirement is as follows: —

ENGLISH GRAMMAR AND COMPOSITION.— Spelling, punctuation, structure of sentences, correct use of words, clearness of expression. The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1896.— Shakespeare's Merchant of Venice, and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Defoe's History of the Plague in London; Scott's Woodstock; Webster's First Bunker Hill Oration; Irving's Tales of a Traveller; George Eliot's Silas Marner.

For 1897.— Shakespeare's As You Like It, and Merchant of Venice; Defoe's History of the Plague in London; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

For 1898.— Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield: Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Tennyson's The Princess.

Those whose age or circumstances forbid so extensive preparation are admitted to the privileges of the school, to take such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian Ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

Applicants from other Theological Institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem*.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week (first half-year).* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week (second half-year).* PROFESSOR TOUSEY.

***Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes. *Three hours a week for one third of the year.* PROFESSOR LEONARD.

**Old Testament.** — Hebrew History. *Four hours a week.* PROFESSOR CURTIS.

***Oratory.** — Class exercises in vocalization and gesture. The Principles of Oratory, exemplified in practice. *One hour a week.* PROFESSOR MAULSBY.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week (first half-year).* PROFESSOR TOUSEY.

**Old Testament.** — Old Testament Theology. *Two hours a week.* Hebrew Language Studies (optional). *Two hours a week.* PROFESSOR CURTIS.

**New Testament.** — Criticism of the Synoptic Gospels, Textual and Historical; Hermeneutics; Life and Teachings of Jesus from the Greek of the Synoptic Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week (first half-year); three hours a week (second half-year).* PROFESSOR WOODBRIDGE *and* PROFESSOR KNIGHT.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Three hours a week (second half-year).* PROFESSOR LEONARD.

*Omitted this year.

**Oratory.** — Practice in the reading of Scripture, Hymns, and in formal and extemporaneous preaching. *One hour a week.*

PROFESSOR MAULSBY.

## MIDDLE CLASS.

**Old Testament.** — * Old Testament Sociology. *Two hours a week.* Hebrew Language Studies (optional). *Two hours a week.*

PROFESSOR CURTIS.

**New Testament.** Criticism of Acts and the Epistles; History and Doctrines of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week.*

PROFESSOR TOUSEY.

**Systematic Theology.** Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week (first half-year); three hours a week (second half-year).*

PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a weeks.*

PROFESSOR LEONARD.

**Applied Christianity.** — Organization and Government of the Various Sects; the Relations of the Church to Individual and Social Life. *Two hours a week.* PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — Criticism, Exegesis, and Doctrines of the Fourth Gospel. *Two hours a week.* PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week (first half-year).*

PROFESSOR KNIGHT.

**Philosophy of Theism.** — Limits of the Intelligence; Theistic Arguments; Special Studies with Reference to the Evidences of Final Causes in Nature; Anti-Theistic Theories. *Three hours a week.*

PROFESSOR TOUSEY.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories

*Omitted this year.

of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week (first half-year).*

PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*

PROFESSOR LEONARD.

**Applied Christianity.** — The Pastor's Personal Qualifications and Duties; Organized Work in the Parish; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. *Two hours a week (first half-year); four hours a week (second half-year).*

PROFESSOR WOODBRIDGE *and* PROFESSOR LEONARD.

# Departments of Instruction.

**Psychology.** — The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principals of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**Rhetoric.** — The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the

chapters which deal with the art of constructing discourse, and with the methods of applying the principles of rhetoric in actual literary work.

**Old Testament.** — I. HEBREW: The aim is a working knowledge of the language of the Old Testament. The first part of the year is devoted to the grammar and the vocabulary of the more common words, with the reading of easy prose. The second part of the year is occupied with exegetical and critical readings from the Pentateuch, with especial reference to modern theories.

II. ADVANCED HEBREW: This is a continuation of Course I. Selections from ancient, middle, and later Hebrew are read, and the various critical questions examined from the point of view of the changed vocabulary and the growing ethical and religious insight.

The courses in the Hebrew language are elective, and aim to supplement the work of the other courses, being at once more technical and more thorough, and leading naturally to independent study and research.

III. HEBREW HISTORY: The aim is to impart a knowledge of Israelitish history from its beginning to its close. The text-book is the revised version of the Old Testament; and each reading is followed by a lecture on the part read in explanation and elucidation of the text. So far as possible, books and parts of books are read in chronological order, and especial attention is paid to recent discoveries, Assyrian, Babylonian, Palestinian.

IV. OLD TESTAMENT THEOLOGY: The purpose is to systematize and emphasize the salient and permanent elements in Old Testament Religion. This course is essentially a continuation of Course III., and includes readings in the Psalms, Wisdom Books, and Apocrypha. Available treatises are used as texts, and lectures are given on the canon and text of the Old Testament, and on special topics in Jewish Theology.

V. Old Testament Sociology: The effort is to give, by means of lectures, a view of the social development of man as illustrated in Hebrew History. The method is inductive and exegetical, while it seeks to do justice to the highest ideals of the Bibical authors. The main divisions of the study are, Social Beginnings, The Family, The State, Economics, and the influence upon these subjects of the Biblical Religion and Morality.

Readings are assigned in the various histories and theologies of the Old Testament, and in the Commentaries.

**New Testament.** — In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and of the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the Synoptic Gospels being employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, the course of facts in his life, and the doctrines he taught. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connections.

In the Middle Year the History and Doctrines of the Apostolic

Church are studied, the Book of Acts being used as the basis. This writing is first examined as a historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

As a part of this study the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

In the Senior Year the problem of the Fourth Gospel is considered: the question of its use among the early Fathers, its internal character and its relation to the other New Testament writings, and to the thought of the Apostolic Church. The books used in the latter part of this year's work are in the German language.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. In general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States, and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou; and of the American Church History series.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.** The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred

are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Lao-tse, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.**—Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.** — After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science; and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.** — The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions, — the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems, — ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in Homiletics covers one half of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The History of Christianity is

traced from its beginnings, with the special aim to discover by what methods the application of Christian principles has been secured and what results have followed; and in general to study the influence of Christianity as a factor of individual development and social progress.

II. The second part of this course is devoted to a study of Christian principles in their present day applications, and of the Christian Church as it exists in modern times, giving attention to the constitution, organization, government of the various sects, and also to methods of work in missions, in reforms, and charities as these are undertaken by Christians of to-day. This study is followed with a discussion of the visible opportunities for work proper to the Church and to Christians, and of the instrumentalities which the most successful working churches employ.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises toward the members of a single congregation, or toward others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church, —baptism, confirmation, the Lord's Supper, marriage, and the burial of the dead. The object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II. and III.) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring cities, that they may study the methods of those who are in living contact with want and suffering; engage in actual benevolent work under the direction of skilled workers, and make report of what they see and do, for discussion in the class-room. This special work is meant to meet the demand for a closer

contact between the church and the daily lives of the people, and for a more sympathetic interest in their social and industrial problems.

**Oratory.** The object of the instruction in the department of Oratory is to gain a natural, impressive and reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the work of the first year involves consideration of the fundamental principles that underlie all oratory, accompanied by practice to assimilate these principles. In the second year the practice becomes specifically adapted to the needs of students of divinity, and includes Scripture and hymn reading, and the preaching of both written and unwritten discourse.

# General Information.

## RELIGIOUS EXERCISES.

Devotional services, conducted by the Professors and the Students, are held daily in the chapel Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

## EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

## LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

## ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

## GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and

vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

### GYMNASTICS.

At least two years' work in the Gymnasium is ordinarily required of all students. Provision is made for continuing such work according to individual needs.

### THE DEGREE OF MASTER OF ARTS.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts, who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

### BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the Dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room is reserved for any appplicant, who does not appear within one week of the opening of the College year.

At present no provision is made for free dormitory accommodations for the women who enter the Divinity School. As a rule they find homes in families in the neighborhood. The expense for room and board in such families is from four to seven dollars a week. The latter price would probably include steam or furnace heat, and light. The women students in the Divinity School may also find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

No charge is made for tuition, rent of rooms and use of furniture in Paige Hall, or for use of libraries. The necessary expenses for board, washing, steam heat, gas, care of room, and gymnasium charges do not exceed two hundred and twenty-five dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Bursar of the College either a bond, with two satisfactory sureties, for the amount of fifty dollars, or he

may deposit the sum of twenty-five dollars in money, which sum will bear interest at the rate of four per cent yearly, and will be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS, ETC.

THE GREENWOOD SCHOLARSHIP. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

THE DOCKSTADER SCHOLARSHIPS. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

# MEDICAL SCHOOL.

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., PRESIDENT.

ALBERT NOTT, M. D., West Newton.
DEAN *and Professor of Physiology.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
SECRETARY *and Professor of General, Descriptive, and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WILLIAM R. CHIPMAN, A. B., M. D., Chelsea.
*Professor of the Principles and Practice of Surgery and Operative Surgery.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine.*

JOHN W. JOHNSON, M. D., 20 Worcester Street, Boston.
TREASURER *and Professor of Obstetrics.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington St., Dorchester.
*Professor of Medical Chemistry.*

CHARLES A. PITKIN, A. M., PH. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 528 Beacon Street, Boston.
*Clinical Professor of the Diseases of Children.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

JOHN L. HILDRETH, A. B., M. D., 14 Garden Street, Cambridge.
*Professor of Clinical Medicine.*

HERBERT L. SMITH, A. M., M. D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

WALTER CHANNING, M. D., Brookline.
*Professor of Mental Diseases.*

THOMAS M. DURELL, M. D., Somerville.
*Professor of Medical Jurisprudence.*

FREDERICK L. JACK, M. D., 437 Boylston Street, Boston.
*Professor of Otology.*

## OTHER INSTRUCTORS.

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene.*

WILLIAM A. WHITE, M. D., Marcella Street, Roxbury.
*Lecturer on Diseases of Children.*

GEORGE A. WEBSTER, M. D., 28 Greenwich Park, Boston.
*Lecturer on Otology.*

FRED H. MORSE, M. D., Melrose.
*Lecturer on Electro-Therapeutics.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston.
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, M. D., 6 Bowdoin Square, Boston.
*Lecturer on Laryngology.*

FRED S. RADDIN, M. D., Chelsea.
*Lecturer on Genito-Urinary Surgery.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

WILLIAM. P. DERBY, M. D., 421 Marlboro Street, Boston.
*Instructor in Gynæcology and Obstetrics.*

CHARLES G. CUMSTON, M. D., 421 Marlboro Street, Boston.
*Instructor in Gynæcology.*

E. CHANNING STOWELL, M. D., 69 Adams Street, Dorchester.
*Instructor in Children's Diseases.*

CHARLES D. KNOWLTON, M. D., Boston.
*Demonstrator of Anatomy.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Assistant in Medical Chemistry.*

CHARLES L. CUTLER, M. D., Marlboro.
*Assistant in Gynæcology.*

ALBERT E. ROGERS, M. D., 143 Washington Street, Dorchester.
*Assistant in Materia Medica.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

RICHARD M. PEARCE, JR., M. D., 585 Washington St., Dorchester.
*Demonstrator of Physiology.*

J. C. D. CLARK, M. D., 17 Moulton Street, Charlestown.
*Assistant in the Theory and Practice of Medicine.*

HOWARD S. DEARING, M. D., 607 Tremont Street, Boston.
*Assistant in Clinical Medicine.*

HERBERT W. WHITE, M. D., 161 Warren Street, Roxbury.
*Assistant in Clinical Medicine.*

CHARLES A. HEBBERT, M. D., Boston.
*Demonstrator of Legal Medicine.*

MARY E. WELLINGTON, New York City.
*Prosector of Anatomy.*

**Laboratory Assistants.**

HAIRABED S. DJELALIAN, Boston.
*General Chemistry.*

FRED HILLIARD ROBINSON, Somerville.
*Medical Chemistry.*

HENRY P. JOHNSON, Richmond, Va.
*Bacteriology.*

# The Medical School.

The Medical School of Tufts College was established in 1893. It offers to women the same facilities that it offers to men. Since the school was opened its corps of instructors has been considerably enlarged, its clinical advantages have been increased, and it offers every opportunity needed for undergraduate study, and in many directions for graduate study and research.

The school is temporarily located at 188 Boylston Street in the city of Boston, in a building belonging to the College. In the coming year it is expected that new and more commodious quarters, especially adapted for the purposes of a Medical School, will be provided.

The present building is directly opposite the Public Gardens, and within a few steps of Park Square, one of the great street-car centres of the city, making it convenient to all the hospitals, dispensaries and public buildings, and the railway stations.

Upon the first floor occupied by the College are the lecture hall, Faculty room, and the women's study and toilet rooms. The lecture hall is supplied with comfortable chairs upon a raised platform, giving the student an unobstructed view of the lecturer, and the illustrations of the subject upon which he is engaged. This room has an abundance of light, while the blackboards and charts add to the convenience of demonstration. The room for women students is large, comfortable, and well supplied with chairs, tables, and desks, and adjoining it is the women's toilet room.

Upon the next floor are the smaller lecture room, the bacteriological laboratory, the private room of the Professor of Medical Chemistry, and the men's study room. The laboratory upon this floor is well adapted to the uses for which it was de-

signed, being fitted with a firm stationary table, and with individual artificial lights of the most modern construction, thus enabling the student to use his microscope without dependence upon daylight. It is well-equipped with microscopes and all necessary appliances.

Upon the third floor are the general chemistry laboratory and dissecting room. The laboratory is fitted with individual lockers, which are furnished with the various re-agents and glassware used by the student, which are distributed to him from the private room of the Professor of Chemistry on the same floor. The dissecting room is well-lighted, and furnished with modern inclined tables, to which are attached receptacles for all refuse matter.

Students of the Medical School have access, for work in Histology and Embryology, to the admirable laboratories of the biological department of Tufts College, in the Barnum Museum at College Hill.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than 200 words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic including decimal and vulgar fractions and percentage.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

**Exceptions.** — No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or State normal schools or of institutions of similar grade. To save delay students are requested to bring their diplomas and certificates with them.

### To the Second Year Class.

Students of this and other accredited medical schools who have passed a majority of the examinations of the Freshman Year, which include Descriptive Anatomy, Physiology, General Chemistry, Histology and Hygiene, may be admitted to the Second year class.

Students of dental colleges whose standard of instruction is

approved by the Faculty of this School, who have attended two full courses of lectures and passed the examinations of the Freshman year as above noted, may be admitted to the Second year class.

### To the Third Year Class.

Students of this and other accredited medical schools who have passed the examinations of the Freshman year and a majority of those of the second year, which include Applied Anatomy, Medical Chemistry and Toxicology, Materia Medical and Therapeutics, Pathology and Bacteriology, may be admitted to the Third year class.

### To the Senior Class.

Students of this and other accredited medical schools who have passed all the examinations of the Freshman and second-year studies and a majority of the third year studies, which include Theory and Practice of Medicine, Surgery, Obstetrics, Gynæcology, Neurology, Pediatrics, and Mental Diseases, and graduates of other regular medical schools, may be admitted to the Senior Class.

Graduates of Pharmacy may be admitted to the Freshman year and excused from General Chemistry.

Students must matriculate before November 1 of each year, in order to fulfil requirements of time.

## REQUIREMENTS FOR GRADUATION.

Candidates for the degree of Doctor of Medicine must fulfil the following requirements: —

They must be twenty-one years of age, and of good moral character.

They must have attended four full courses of medical lectures at some accredited medical college, the last of which shall have been at this school, and no two courses in the same year.

They must have passed all the required examinations.

They must have attended one case of obstetrics.

They must have dissected one half of the body.

## DIVISION OF STUDIES.

For the Freshman Year. — Descriptive Anatomy, Physiology, General Chemistry, Histology and Embryology, and Hygiene.

For the Second Year. — Applied Anatomy, Medical Chemistry and Toxicology, Materia Medica and Therapeutics, Pathology and Bacteriology.

For the Third Year. — Theory and Practice of Medicine, Surgery, Obstetrics and Clinical Obstetrics, Neurology, Pediatrics, Gynæcology.

For the Senior Year. — Clinical Medicine, Clinical Surgery, Clinical Gynæcology, Genito-Urinary Diseases, Rectal Diseases, Mental Diseases, Ophthalmology, Otology, Laryngology, Clinical Pediatrics, Electro-Therapeutics, and Legal Medicine.

# Departments of Instruction.

## Anatomy.

PROFESSOR THAYER.
DRS. KNOWLTON AND GREENE. } *Five hours a week.*

The course in Anatomy comprises, for the Freshman year, lectures, recitations, and demonstrations, illustrated by plates, models, and dissections. During the Second year especial attention is devoted to Applied and Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy, who will assign the parts to students and give all necessary assistance and advice. Abundance of material is furnished students at cost.

## Histology and Embryology.

DR. BATES. *One hour a week.*

These subjects are taught by lectures and demonstrations, and in the case of Histology by laboratory work upon the primary tissues and the minute anatomy of these organs, an autoptic knowledge of which is necessary for the clear comprehension of the more common pathological conditions. The course in Embryology is comparative, the endeavor being to throw light upon not only those points which are of value in Obstetrics, but to render more easy of comprehension the structure and arrangement of the various organs, cranial nerves, eye and ear, uro-genital system, and other subjects which not

infrequently cause the student no little perplexity. The laboratory of the department is well equipped with microscopes, microtomes, reagents, etc., as well as with slides, diagrams, and material for student work. In Embryology, facilities are afforded for research work for all who are prepared to carry on investigation, and graduate work will be outlined upon application to the instructor.

### Physiology.

PROFESSOR NOTT.
DR. PEARCE. } *Three hours a week.*

This fundamental branch is taught by lectures and recitations. Lectures will be given on the chemical constituents of the body, food in its relation to digestion, secretion, absorption, and excretion, blood and its circulation, respiration, animal heat, nutrition, nervous system, and special senses.

Recitations will be given on the subject matter taught. This branch will be taught through the entire course.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds, also, is taken up at considerable length, and special reference made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. Much attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of this knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The aim is to impart such information in Chemistry as is necessary to the intelligent physician. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

### Materia Medica and Therapeutics.

PROFESSOR WHEATLEY.
DR. ROGERS. } *Three hours a week.*

Instruction in this department consists of lectures and recitations, three hours a week during the year. Medicines will be exhibited as far as possible. Therapeutics will receive especial attention.

The metric system will be taught, and the ability to write prescriptions in both the old and new systems will be insisted upon.

A reasonable amount of time will be devoted to the late additions to the Pharmacopœia.

### Medical Chemistry.

PROFESSOR AUSTIN.
DR. THORPE. } *Four hours a week.*

Owing to the increased facilities afforded by the management of the school, the scope of instruction in this subject has been largely increased this year, so that now there is offered, in addition to lectures and recitations, practical work in urinalysis, including careful investigation with the microscope, analysis of bile, gastric juice, saliva, blood, and drinking water. Quantitative analysis, in so far as it pertains to these subjects, is conducted by the students in the laboratory, and the results obtained are carefully filed for future reference. Photo-micrographs have been largely used as a means of familiarizing students with the appearances of microscopic objects. The latter half of the year is devoted to toxicology, and students are required to examine poisons, not only in their pure state but mixed with organic matter; to which has been added this year the examination of various food stuffs which are commonly adulterated. At each examination a written analysis is required of a specimen of milk, urine, and a poison.

### Pathology.

PROFESSOR DUDLEY.
DR. BROWN. } *Two hours a week.*

Instruction in this department will consist of lectures, recitations from text-book, and practical work in the laboratory. Each student, before taking an examination in Pathology, will be required to perform satisfactory laboratory work. To those students who do not possess a microscope, will be loaned one of those belonging to this department at a nominal rental.

It will be the aim to make clear the importance of a thorough knowledge of the causes, course and results of pathological processes, giving frequent illustrations by morbid specimens.

### Bacteriology.

DR. F. B. BROWN. *Five hours a week.*

The course in Bacteriology consists of twenty hours for each student in the laboratory, where the more important micro-organisms are lectured upon and the general bacteriological technique is taught. The laboratory is well equipped with apparatus for the cultivation and observation of bacteria. The process of growth, upon culture media and staining of the different species, is especially dwelt upon. The student is furnished with a Leitz microscope at a moderate cost; and the school has added several Oil Immersion lenses for the use of this department this year.

### Theory and Practice of Medicine.

PROFESSOR HALL.
DR. CLARK. } *Four hours a week.*

This course consists of two lectures each week by Professor Hall, covering the whole ground of general medicine, comprising in all sixty lectures. The didactic lectures of this course are fully exemplified by cases presented in the course of clinical medicine. It is considered necessary for the student to be well founded in the theory of medicine before taking up to any great degree the bed-side study of disease.

### Clinical Medicine.

PROFESSOR HILDRETH.
DRS. FEARING and WHITE. } *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Neurology.

PROFESSOR WEBBER. *Two hours a week.*

There will be two lectures each week, during the second term, upon diseases of the nervous system and mental diseases. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centres. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Mental Diseases.

PROFESSOR CHANNING.

Instruction in this branch will consist of a course of twelve lectures so arranged as to cover the whole subject of mental diseases. The lectures will be of a practical nature and will be adapted to the requirements of the general practitioner.

### Diseases of Children.

PROFESSOR WILLIAMS.
DRS. WHITE AND STOWELL. } *Two hours a week.*

Instruction in this department will consist of lectures, clinical teaching, and clinical conferences, embracing the anatomy, hygiene, and diseases of infancy and childhood. The clinical

advantages offered to students in this department are very great, and the number of cases shown is large and varied.

Instruction in the contagious diseases of childhood will be given by Dr. Stowell, and an opportunity will be afforded the students to observe this class of diseases at the homes of the patients.

Dr. White will give a course of didactic lectures at the College, during which, attention will be paid to the peculiarities of organization and function incident to the period of infancy and childhood, and the subject of infantile feeding will be thoroughly taught, and the methods practically illustrated. The hygiene of infancy will also be considered.

### Electro-Therapeutics.

DR. MORSE. *One hour a week.*

In this department will be given a course of lectures involving a study of the properties and of the effects upon the system of the galvanic, the faradic, and the static currents. The rapid advances made within recent years in the application of electricity in surgery, gynæcology, and neurology, as well as in general diseases, make it play an important part in modern diagnosis and therapeutics. The aim of the instruction will be to impart a knowledge of the subject based upon recent investigations and to point out the wide range of usefulness of this important remedial agent, at the same time keeping within conservative limits.

### Legal Medicine.

PROFESSOR DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurisprudence, together with a thorough course in the making of medico-legal autopsies, with as many practical demonstrations as possible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery.

PROFESSOR CHIPMAN. *Three hours a week.*

Two lectures and one recitation will be given weekly during the first term. In the second term there will be two lectures each week by Professor Chipman, and one recitation and lecture given by the assistant, Dr. Raddin. A considerable portion of the surgical course is devoted to pathology, for the reason that if students do not become well grounded in it during their college course they are very unlikely to take it up after becoming occupied with the details of practice. The course in operative and minor surgery is very thorough, and includes all the usual operations upon the cadaver. Material for the illustration of this course is abundant, and students are given opportunities to operate upon the cadaver. In the department of principles and practice of surgery, particular attention is paid to the subject of diagnosis, and all didactic teaching upon the various branches of surgery is abundantly illustrated in the clinical material furnished by the several hospitals and dispensaries of the city.

As in the past, it will be the aim to make the Surgical Clinics of the greatest value to the student. The subject of Antiseptic Surgery in all that pertains to the knowledge and direct application of the same will be fully illustrated and shown as far as practicable. Fractures and dislocations will be treated by a thorough course of lectures and illustrations. The various fractures and dislocations will be illustrated by a specially prepared skeleton. The employment of the various means for the reduction of dislocations and the preparation of splints and other surgical appliances will be taught in the lecture room.

### Clinical Surgery.

PROFESSOR SMITH. *Six hours a week.*

The exercises in this department are held mostly at the Boston City Hospital, the Boston Dispensary, and the Suffolk Dispensary, and consist of demonstrations before the class of

cases illustrative of surgical pathology. At the hospital cases are obtained for study both from the out-patient department and from the wards. The very large number of accident cases received at this institution affords an unusual opportunity for the study of this branch of the subject, which is so important for the average practitioner of medicine. Each student is enabled to make a personal examination of the patient, and great care is exercised in teaching proper methods of investigation, and in correcting faulty, illogical, or inconsiderate habits of inquiry or physical examination.

The clinical exercises are supplemented by one conference each week at the school, at which, after a review of the more important cases previously examined at the hospital, written reports of cases, previously assigned to Senior students, are read and defended before the class. Besides the attendance at the hospitals on public operating days, the members of the Senior class will be permitted, in sections, to attend a large variety of surgical operations, and thus become practically familiar with all the procedures of modern surgical technique.

### Otology.

PROFESSOR JACK.
DR. WEBSTER. } *Two hours a week.*

Instruction in this department will consist of lectures and clinical teaching Clinics will be held at the Massachusetts Charitable Eye and Ear Infirmary where nearly five thousand patients with ear disease are annually treated.

### Genito-Urinary Diseases.

DR. RADDIN.

The various diseases of the Genito-Urinary system will be considered and illustrated by cases as far as practicable.

### Diseases of the Rectum.

DR. OTIS.

Instruction in this department will be given by Dr. Otis at the Boston Dispensary.

### Ophthalmology.

PROFESSOR TENNEY. *One hour a week.*

The instruction in this department will be of the most practical character, being designed to prepare the student to treat such diseases of the eye as will be met with in general practice. The lectures will be fully illustrated by drawings and apparatus, and everything set forth in the didactic lectures will, as far as is practicable, be again brought to the attention of the student at the Dispensary, where clinical material is amply sufficient for the purpose.

### Laryngology.

DR. BOARDMAN.

The Department for Diseases of the Throat and Nose at the Boston Dispensary is open to students during the service of Dr. Boardman who will give practical instruction in Rhinoscopy and Laryngoscopy.

### Obstetrics.

PROFESSOR JOHNSON. }
DR. DERBY. } *Three hours a week.*

The instruction in Obstetrics will consist of lectures illustrated by plates and manikins, with recitations, three times a week. Especial stress is put upon diagnosis, the mechanism of labor, and care during convalescence. So far as possible, the various operations will be demonstrated upon the cadaver. Cases of Obstetrics will be furnished students under the charge of the Professor and Dr. Derby.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class, and twice weekly, sub-divisions of the class receive practical instruction at the Dispensary from Instructor Cumston and at the Free Hospital for Women by Instructor Derby. Once each week a quiz is held by Assistant Cutler on the lectures of Dr. Cushing. Arrangements have been made, by which students

of the Senior class, who wish to continue their studies after graduation, may witness operations in the hospital services of Dr. Cushing.

Dr. Holden has also kindly consented to continue to give clinical instruction to a limited number of students at the Staniford Street Dispensary.

Courses of instruction are open to the students at the clinics of the Free Hospital for Women, on payment of a moderate fee.

## TEXT-BOOKS.

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

**Anatomy**: Gray, Quain, Weisse, Holden, Morris, Cunningham's Dissector.

**Physiology**: Kirkes' Handbook (13th edition), Landois and Sterling, Martin's Human Body, Flint, Foster.

**General Chemistry**: Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Medical Chemistry**: Tyson on the Urine, Purdy, Roberts on Renal and Urinary Diseases.

**Toxicology**: Reese on Medical Jurisprudence and Toxicology-Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics**: Bartholow (8th edition), Shoemaker (3d edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology**: Greene, Warren, Ziegler.

**Bacteriology**: Woodhead, Sternberg.

**Obstetrics**: Lusk, Playfair, Cazeaux, Winckle.

**Gynæcology**: Diseases of Women by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery**: American Text-Book of Surgery, Treves, Ashurst, Wyeth.

**Practice of Medicine**: Osler, Pepper.

**Clinical Medicine**: Osler's Practice of Medicine.

**DaCosta's Medical Diagnosis**: Flint's Practice of Medicine. Flint's Manual of Percussion and Auscultation.

**Neurology**: Gower, Dana, Gray.

**Mental Diseases**: Cloustin, Spitzka.

**Pedriatrics**: Smith's Diseases of Children, Keating's Cyclopedia of the Diseases of Children.

**Ophthalmology**: De Schweinitz, Nettleship, Noyes.

**Medical Dictionary**: Dunglison.

# General Information.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the last Wednesday in September of each year, and continues until the last Wednesday in May.

There are no exercises at the school during the week of the Christmas vacation, nor upon Thanksgiving Day, or Patriots' Day.

The next annual course of lectures (1896-97) will commence on Wednesday, September 30, 1896, and continue until Wednesday, May 26, 1897.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of the session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school.

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, CHARLES P. THAYER, M. D., 74 *Boylston Street*, *Boston*, *Mass.*

## CLINICAL ADVANTAGES.

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary are open to students and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, the Massachusetts Eye and Ear Infirmary, and at the Boston Dispensary, which latter, as the largest medical charity in Boston (42,587 cases were treated last year), affords an unsurpassed field for familiarizing the student with the various forms of disease. Members of the medical and surgical staff are also connected with various other institutions among which may be mentioned: the Chelsea Hospital, the Somerville Hospital, the Cambridge Hospital, the Woman's Charity Club Hospital, the Free Hospital for Women, and the Marcella-St. Home, and so far as possible the material thus afforded will be utilized for the benefit of the students.

## EXAMINATIONS.

The examinations are held in the College Building at the opening and close of the regular course of lectures, and are in writing. Those at the opening of the course in the Fall are for those commencing the study of medicine, and for students from other colleges who apply for advanced standing; also for those who have not passed the Spring examinations.

Examinations at the close of the course in the Spring are as follows: —

*Freshman Year:* Descriptive Anatomy, Histology, including Embryology, Physiology, General Chemistry, and Hygiene.

*Second Year:* Applied Anatomy, Materia Medica and Therapeutics, Pathology, Medical Chemistry and Toxicology and Bacteriology.

*Third Year:* Theory and Practice of Medicine, Surgery, Obstetrics, Pediatrics, Neurology, Gynæcology, Mental Diseases.

*Senior Year:* Clinical Medicine, Clinical Surgery, Clinical Obstetrics, Clinical Gynæcology, and two of the following elective subjects: Electro-Therapeutics, Diseases of Rectum, Genito-Urinary Surgery, Clinical Pediatrics, Legal Medicine, Ophthalmology, Otology and Laryngology.

The examination in Bacteriology takes place immediately at the close of the course in that study.

The examination in Obstetrics is optional to students of the Middle year.

Students are eligible for their examinations as follows: those of the Freshman year at the end of first year of attendance; those of the Second year at the close of the second year's course, provided they have passed a majority of the Freshman examinations; those of the Third year at the close of the third year's course provided they have passed all of the Freshman and a majority of the Second year examinations. Those of the Senior year at the close of the fourth year's course, provided they have passed all of the Freshman and Second year examinations, and a majority of those of the third year.

## EXPENSES.

### Freshman Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 100.00 |

### Second Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 100.00 |

### Third Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 100.00 |

**Senior Year.**

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 50.00 |
| Graduation fee | 30.00 |
| Ticket admitting to the four years' lectures (when paid in advance) | 300.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

For the purpose of encouraging thoroughness of medical education, students now connected with the school voluntarily electing to pursue the four-years course, will be received for the fourth year at a nominal rate.

# THE BROMFIELD-PEARSON SCHOOL.

# Bromfield-Pearson School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

GARDNER C. ANTHONY, A. M., DEAN,
*and Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.,
*Instructor in Drawing.*

FRANK G. WREN, A. B.,

CHARLES G. JORDAN,
*Instructors in Mathematics.*

CHARLES ST. CLAIR WADE, A. M
*Instructor in French.*

GEORGE H. FURBISH,
*Instructor in Woodwork and Foundry Work.*

——— ———,
*Teacher of Forging.*

HORATIO W. MYRICK, A. M. B.,
*Instructor in Machine Work.*

## STUDENTS.

| | |
|---|---|
| Child, Henry T. . . . . | *Medford.* |
| Cooper, Orville . . . . . | *Pictou, Ontario, Can.* |
| Cummings, Allen . . . . . | *Woburn.* |
| Donohoe, Charles M. . . . . | *Lynn.* |
| Gibson, E. Eugene . . . . . | *Cherry Valley, Ontario, Can.* |
| Gough, Charles E. . . . . | *Hingham.* |
| Locke, William L. . . . . | *Watertown.* |
| McDuffee, Edgar J. . . . . | *Bellows Falls, Vt.* |
| Phipps, Ross E. . . . . | *Watertown.* |
| Polk, Robert H. . . . . | *Towanda, Pa.* |
| Tibbetts, Fred E. . . . . | *West Somerville.* |
| Wallace, Edward D. . . . . | *Milford, N. H.* |

# The Bromfield-Pearson School

Is a department of Tufts College, designed to provide a special course of technical instruction to such as may be qualified by previous education and maturity of mind to fit for either of the Engineering Courses of the College in one year, or to pursue with equal advantage the special two-years course of the school.

The first year may be taken as preparatory, either to the Engineering Departments of the College, or to the technical course of the school.

The course for the second year is arranged to meet the wants of those who are unable to pursue their studies for a longer period, but require the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES TO BE DERIVED FROM THE COURSE.

Students may prepare for the Engineering Departments of the College in less time than by the ordinary fitting school, as it is possible to take all the mathematics of a high school course in one year, beside the necessary preparation in language.

Students who pursue the preparatory course, and complete the work satisfactorily, will be admitted to College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are, in most respects, identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two-years course, and later decide to enter the College, will receive full credit, by the College, for all work satisfactorily performed which may be equivalent to that required in the Engineering department.

The association with College work and College men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and Lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in Carpentry, Moulding, Pattern work, Forging, and Machine work.

## THE BUILDING.

The Bromfield-Pearson Building is a three-story building 100x50 feet, comprising drafting and recitation rooms, offices, and shops, for conducting the special courses of the school, and the department of drawing and shopwork in the College. The drafting rooms are three in number, and separated from the noise and vibration of the shops. Abundant and uniform light is provided, rooms on the upper floor having large skylights on the northerly side. There is a forge, moulding, pattern, and machine shop. These are equipped with modern tools and in the most approved manner. Each student is provided with a separate bench, tools, forge, lathe, etc. A twenty-five horse-power Buckeye engine furnishes the motive power for the shop, and also serves for experimental work in the study of the steam engine. One room is set apart as a study for such of the students as do not room at the College, and others who desire to prepare their lessons at the building.

# Course of Study.

## FIRST YEAR.

### Preparatory Course.

ALGEBRA is begun, and during the first three quarters will include quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

GEOMETRY is begun during the first term, and continued throughout the year. The course includes plane geometry and all of solid save spherical.

PLANE TRIGONOMETRY is taken during the fourth quarter.

ELEMENTARY MECHANICS is pursued by the special engineering students during the second term.

ENGLISH GRAMMAR AND COMPOSITION is pursued throughout the year.

FRENCH for the entire year is required of those who are preparing for a College course. Special students may elect.

DRAWING (Freehand) comprises the course required for entrance to the College, together with technical sketching and lettering.

DRAWING (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in freehand are identical with the College course in drawing, and all (or a part) may be omitted by students fitting for College.

DESCRIPTIVE GEOMETRY may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the second term, and is required of those taking the two-years course.

SHOP WORK is elective, and may be taken at any time when it will not interfere with required work.

### Electives.

Those who may be sufficiently prepared in any of the above studies may elect any of the following: —

Preparation in elementary algebra, as above, will admit to course in College algebra.

Preparation in elementary algebra, plane and solid geometry, will admit to Freshman mathematics.

Preparation in elementary mechanics will admit to course in physics, consisting of lectures and laboratory work.

As the instruction in drawing is largely individual, the student may take the grade for which he is prepared.

## SECOND YEAR.

### Special Engineering Course.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to College classes for which they may be fitted.

ADVANCED ALGEBRA AND SPHERICAL GEOMETRY are pursued with the College classes during the first term.

ANALYTICAL GEOMETRY is taken during the first term.

CALCULUS (Differential and Integral) is studied during the second term. This is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

APPLIED MECHANICS is pursued for one term, and the subjects assigned for design are such as to afford a practical application of the theory. This includes the subject of Graphic Statics.

MACHINE DRAWING. Much attention has been given to the method of presenting this work to enable the student to gain, in the shortest time, a comprehensive knowledge of the practical methods for the graphic representation of mechanical ideas. This work is conducted in precisely the same manner as in a well-organized drafting room. It consists largely of freehand sketches and plainly finished drawings, made according to the most approved systems. Each student is now provided with a time card on which a record is kept of the time employed in the execution of all drawings. It is not only necessary that drawings be well made, and accurate, but that a reasonable time be employed in their execution.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same. It is taught by means of graphic problems and lectures.

MACHINE DESIGN is begun as soon as the student has become proficient in the preceding courses, and has acquired neatness, accuracy, and rapidity of execution. He is now encouraged to think and act for himself, thereby developing his intuitive ability and self-reliance. Many of the methods used in connection with this study are believed to be original with the school, and have resulted in a great saving of the student's time.

STEAM ENGINE. A brief course in the theory of steam is pursued in connection with the problems for design of Boilers and Engines. The subject of VALVE GEARS is considered at this time. The student is also taught to apply the INDICATOR and measure the power and consumption of water. Excellent opportunities are afforded at the College for this work which is of the most practical character.

MOULDING. A short but comprehensive course in the foundry is required of all second-year students. The special object in this training is to acquaint the future designer

with the methods employed in the modern foundry, and enable him to judge as to the best methods of constructing patterns. This work is of a very practical nature, consisting of the moulding of a great variety of patterns, the making of cores, and, finally, casting the more important pieces.

SURVEYING. Such practice in the use of transit and level is afforded the student as shall familiarize him with their use, and enable him to make a simple survey.

**Electives.**

The following courses may be pursued in connection with the foregoing, when time, and previous preparation, will permit:—

PATTERN MAKING. This course includes Carpentry, Turning, Pattern Making and Moulding. *Six hours a week (first half-year); three hours a week (second half-year).*

FORGING. In this short course it is designed to make the student familiar with the metals and the method of working them. The exercises include heating, bending, drawing, upsetting, welding, tempering, case hardening, etc. *Three hours a week (second half-year).*

MACHINE WORK. Vise work in iron, including surface chipping, squaring and fitting, keyseating, scraping and polishing. The machine practice consists not only in the operation of turning, planing, drilling, boring, etc., but in a careful study of the machines, their efficiency, and capabilities. *Six hours a week (second half-year).*

PHYSICS. (See, under Departments of Instruction, the College of Letters, Physics.) *Three hours a week for the year.*

PHYSICAL LABORATORY. (See, under Departments of Instruction, Physics.) *Six hours a week (second half-year).*

CHEMISTRY. (See, under Departments of Instruction, Chemistry.) *Three hours a week for the year.*

SURVEYING. This is the regular work in Surveying for Engineering students in the Sophomore year. *Four hours a week (first half-year).*

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from a school previously attended, or by examination, oral or written, as may be deemed necessary.

In examinations, either for entrance or for advanced standing, the students are considered individually, rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## REGULATIONS OF THE SCHOOL.

Students are subject to the rules governing College students.

Prompt and regular attendance, together with a faithful performance of all duties, is required.

Polite and orderly conduct is insisted upon, and any damage to school property must be made good by the student causing it.

Students who may elect any of the subjects in the regular College courses must attain at least seventy per cent in those studies in order to remain with the class.

No change in program is permitted during the term.

Only such students are encouraged to enter as may be thoroughly in earnest, and desire to make the most of their opportunities. To such, the institution offers exceptional opportunities.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state the subjects which have been completed according to the requirements of the institution. No diploma is given, or degree conferred.

The tuition fee is one hundred and twenty dollars per year, payable as follows: Sixty dollars on or before the 5th of October, and the balance on or before the 15th of March.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Students board in commons at $3.50 per week; in private families at $3.50 to $5.00 for table board and $1.50 to $2.00 for furnished room. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition | $120.00 | $120.00 |
| Half room-rent | 15.00 | 75.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Physical training | ——— | 10.00 |
| Total | $271.00 | $395.00 |

For other information address, GARDNER C. ANTHONY, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

# DEGREES AND HONORS

1894-95

# Thirty-Ninth Annual Commencement.

## JUNE 19, 1895.

## DEGREES CONFERRED.

### In Course.

#### BACHELORS OF ARTS.

LOUIS WALES ARNOLD (*extra ordinem*).
EUGENE AVERELL.
CHARLES NEAL BARNEY (*with Honors in History*).
FRANK HARDING CHESSMORE.
CHARLES DOW CLARK (*with Honorable Mention in English Literature*).
EDWARD CHANNING CRAIG (*with Honorable Mention in French*).
CLARENCE LIVINGSTONE EATON
HAROLD BARTLETT FOBES (*with Honorable Mention in Political Science and English Literature*).
HARRY CHARLES FOLSOM (*with Honors in Greek and Honorable Mention in English Literature*).
HENRY PENNELL FRANK (*with Honors in Physics and Political Science*).
MELVIN MAYNARD JOHNSON (*extra ordinem*).
ORLANDO FAUKLAND LEWIS (*with Honors in German and French*).
FRANK MARTIN LYNDE.
JOSEPH HENRY SAUNDERS.
JAMES FITTS SHELDON.
ROBERT BAXTER SMITH.
WILLIAM RISBY WHITEHORNE (*with honors in Mathematics*).
GUY MONROE WINSLOW (*with Honors in Biology*).

#### BACHELORS OF PHILOSOPHY.

EDWARD PERKINS CLARKE (*with Honorable Mention in French*).
WILLIAM ROGER DUNHAM.
WILLIAM HOLLIS GODFREY.

GEORGE PRESTON IRELAND (*with Honorable Mention in Mathematics*).

CHARLES LUCIUS RICKETTS (*with Honorable Mention in Political Science and English Literature*).

BACHELORS OF CIVIL ENGINEERING.

ARTHUR LINCOLN GEORGE.
CHESLEY METCALF JOHNSTON.
CHARLES HARRISON PAGE.

BACHELORS OF DIVINITY.

ARTHUR ADOLPHUS BLAIR.
THOMAS BUTLER.
ALFRED JAMES CARDALL.
JOSEPH FERNALD COBB.
CURTIS HOYT DICKINS.
TOM ROSCOE.
ASHLEY AUBURN SMITH.
JAMES DANNALS TILLINGHAST.
CHARLES HENRY WELLS.

DOCTORS OF MEDICINE.

WILLIAM HOWARD BAILEY.
WILLIAM HENRY BERTRAM.
HARRY EVAN BONYMAN.
MARY FRANCES BUTTERWORTH.
BESSIE DELANO DAVIS.
JANE LOUISE DENNIS.
ANNA MARY DORR-BRYANT.
MARIA EMMA DREW.
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## AWARDS OF PRIZES, 1894-95.

**Goddard Prize in Latin.**

FLORENCE GERTRUDE DYER.

**Goddard Prize in Mathematics.**

BEATRICE ALEXANDRA GRANT and WILLIE PARKER JONES.

**Greenwood Prize Scholarship in Oratory.**

EDWARD CHANNING CRAIG.

**Rhetorical Prizes.**

*First Class** — (1) WILLIAM ROGER DUNHAM.
(2) CHARLES DOW CLARK.
*Second Class* — (1) ALARIC BERTRAND START.
(2) REIGNOLD KENT MARVIN.
*Third Class* — (1) ROLLIN BREWSTER SANFORD.
(2) FLORENCE LEDYARD CROSS.

**Entrance Examination Prizes, 1895-96.**

Second to GRACE EVELYN GOUDEY; no first prize awarded.

**Greenwood Prizes in Oratory in the Divinity School.**

HERBERT ELMON BENTON, A. B., ALBERT EUGENE BARTLETT, and JOHN EILLS.

**Perkins Prizes for Extemporaneous Preaching in the Divinity School.**

ASHLEY AUBURN SMITH and ALFRED JAMES CARDALL.

---

* The classification is based on the number of term hours done in Oratory.

# CATALOGUE

OF

# TUFTS COLLEGE

1896-97

# CATALOGUE

OF

# TUFTS COLLEGE

1896-97

BOSTON:
THE BARTA PRESS,
144 AND 148 HIGH STREET,
1896.

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# Calendar.

## 1896.

| | | |
|---|---|---|
| SEPT. | 17. | College year begins (all departments except the Medical School), Thursday morning. |
| SEPT. | 20. | Russell Lecture, Sunday, 10.30 A. M. |
| NOV. | 25. | Thanksgiving recess begins, Wednesday at 1 P. M, |
| NOV. | 29. | Thanksgiving recess ends, Sunday evening. |
| DEC. | 23. | Christmas recess begins, Wednesday at 1 P. M. |

## 1897.

| | | |
|---|---|---|
| JAN. | 6. | Christmas recess ends, Wednesday evening. |
| FEB. | 6. | End of first half-year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 8. | Second half-year begins, Monday. |
| MARCH | 27. | Spring recess begins, Saturday at 1 P. M. |
| APRIL | 4. | Spring recess ends, Sunday evening. |
| MAY | 21. | Prize Reading in the College of Letters, Friday. |
| JUNE | 1. | Prize Reading in the Divinity School, Tuesday. |
| JUNE | 11. | Class Day, Friday. |
| JUNE | 12. | Baccalaureate Sermon, Sunday, 4.30 P. M. |
| JUNE | 16. | Forty-first Annual Commencement, Wednesday. |

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*First Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| JUNE | 17. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M.<br>Physics and Drawing, 4 to 5 P. M. |
| JUNE | 18. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M.<br>Chemistry, 4 to 5 P. M. |
| JUNE | 19. | Greek and Intermediate or Advanced German or French, 9 to 11 A.M.<br>Natural History (two subjects), 11 A. M. to 1 P. M. |

## Summer Vacation, Thirteen Weeks.

*Second Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| Sept. | 14. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M.<br>Drawing, 4 to 5 P. M. |
| Sept. | 15. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M. |
| Sept. | 16. | Greek and Intermediate or Advanced German or French, 9 to 11 A. M.<br>Natural History (two subjects), 11 A. M. to 1 P. M.<br>Physics, 2 to 3 P. M.<br>Chemistry, 3 to 4 P. M. |

| | | |
|---|---|---|
| Sept. | 15. | Examination for Admission to the Divinity School in Miner Hall, beginning at 9 A. M. |
| Sept. | 16. | College Year begins, Thursday morning.<br>Registration of all students at Secretary's office.<br>Major departments and plans of study for the first half-year must be reported before noon of this day. |
| Sept. | 18. | Regular College exercises begin. |
| Sept. | 19. | Russell Lecture, Sunday, 10.30 A. M. |
| Dec. | 22. | Christmas recess begins, Wednesday evening. |

## 1898.

| | | |
|---|---|---|
| Jan. | 5. | Christmas recess ends, Wednesday evening. |
| Feb. | 5. | End of first half-year, Saturday. |
| Feb. | 7. | Second half-year begins, Monday. |

Tufts College is situated at College Hill, four miles from Boston, on the Southern division of the Boston & Maine Railroad. The post-office address is — Tufts College, Mass.

# Historical Sketch.

TUFTS COLLEGE was founded under a charter granted April 21, 1852. Like so many of the endowed colleges of the country, it owed its beginnings primarily to the need of an educated ministry, felt by an important body of Christians. Its work is, however, non-sectarian, a fact amply shown by the membership of its Faculty and student body. The aim of its instruction has been always the pursuit of truth.

The movement resulting in the founding of the College was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care, and bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. William J. Walker came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

Students were first formally admitted in 1855. The only building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. In March, 1875, the Rev. Elmer Hewitt Capen, D. D., was elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June.

Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a

condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882 the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. Charles H. Leonard, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of Ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception-room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had a very rapid development, and in 1894 the field was broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, pattern-making, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

In 1883 the late Phineas T. Barnum gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw the completion of the Goddard Chapel, a monument of architectural beauty, given by Mrs. Mary T. Goddard as a memorial of her husband, the first treasurer of the college. The Goddard Gymnasium, a gift from the same source, was also completed in 1883. Dean Hall, a new dormitory, made necessary by the growth of the college, was erected in 1887 from funds bequeathed by the late Oliver Dean. In the college year 1894–95 two new buildings were opened in addition to the west wing of the Barnum Museum. These were the Chemical Building and Commons Hall, containing students' rooms, a dining hall, and the post-office.

The development of the college in its internal life has, however, been the notable fact of the last few years, of which the external changes have been the indications. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, with an entrance requirement, believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the college towards the broadening of its opportunities, but it soon proved to be insufficient. There had been a steady growth for many years in the amount of work done and in the number of departments of learning represented. Instead of the five members of the corps of instruction at the opening of the college in 1855, the catalogue of 1893–94 showed a body of active instructors, exclusive of the Divinity and Medical Schools, numbering twenty-seven, and offering subjects aggregating one hundred and thirteen and divided among twenty-two departments, exclusive of the Engineering Courses proper. Two new departments had been instituted in 1892, in response to the tendencies of educational development — Biology and History. In the fall of 1893 it seemed possible to take another

step and to put in operation the present plan of work, which is believed to be an approach to a rational co-ordination and connection of the college and university systems. The beneficial results, in the growth of a more earnest and scholarly spirit, have already been felt.

In this revision of requirements provision was made for admission of graduates of good English high schools to courses leading to the degree of Bachelor of Philosophy. This opportunity was broadened last year by the opening of four-year courses in Biology, Chemistry, General Science, and Medical Preparatory work, these courses leading to the degree of Bachelor of Science, and being accessible to graduates of all good high schools. These new courses open broad opportunities to graduates of schools, not fitting especially for college, to secure a thorough college training. Bachelors of Philosophy may, if they desire, go on to the attainment of the degree of Bachelor of Arts.

In response to a pressing demand the college was, in the summer of 1892, opened to women on the same terms as to men. Nine women registered in all departments in that year. In 1895–96 the catalogue showed a registration of 54 women in the College of Letters, 11 in the Divinity School, and 33 in the Medical School. In the fall of 1894 there was opened for the accommodation of women students Metcalf Hall, the gift of Mr. Albert Metcalf, of Newton. The admission of women to the college was followed a year later by the opening of the Tufts College Medical School. The school has graduated three classes and has enjoyed substantial growth in the number of its students and in its facilities for work.

## THE COLLEGE CHARTER.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the

business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time, to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures, of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the Trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such man-

ner as shall most effectually promote virtue and piety and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

# REGISTER

OF

# TUFTS COLLEGE

1896-97

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DAVID L. MAULSBY, A. M., 80 Curtis Street
*Professor of English Literature and Oratory.*

J. STERLING KINGSLEY, S. D., 128 Professors Row.
*Professor of Biology.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
*Professor of General Descriptive and Surgical Anatomy, and Secretary of the Medical School.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine and Clinical Medicine.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

GARDNER C. ANTHONY, A. M., 14 Professors Row.
*Professor of Technical Drawing and Dean of the Bromfield-Pearson School.*

ARTHUR MICHAEL, A. M., PH. D., 44 Mt. Vernon Street, Boston.
*Professor of Chemistry.*

WARREN S. WOODBRIDGE, A. M., B. D., 12 Pearl St., Medford.
*Woodbridge Professor of Applied Christianity.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington St., Dorchester.
*Professor of Medical Chemistry and Toxicology.*

CHARLES A. PITKIN, A. M., PH. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 528 Beacon Street, Boston.
*Clinical Professor of the Diseases of Children.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

HERBERT L. SMITH, M. D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

WALTER CHANNING, M. D., Brookline.
*Professor of Mental Diseases.*

THOMAS M. DURELL, M. D., Somerville.
*Professor of Medical Jurisprudence.*

FREDERICK L. JACK, M. D., 437 Boylston Street, Boston.
*Professor of Otology.*

LEO R. LEWIS, A. M., 20 Professors Row.
*Professor of the History and Theory of Music.*

GEORGE H. WASHBURN, A. B., M. D., 311 Marlboro St., Boston.
*Professor of Obstetrics.*

FRANK W. DURKEE, A. M., 38 Professors Row.
*Assistant Professor of Chemistry.*

CHARLES ST. CLAIR WADE, A. M., Conwell Avenue.
*Assistant Professor of Greek.*

CHARLES G. CUMSTON, B. M. S., M. D., 826 Beacon St., Brookline.
*Assistant Professor of Surgical Pathology.*

FRANK M. BRIGGS, M. D., 299 Beacon St., Boston.
*Assistant Professor of Clinical Surgery.*

FRANK E. SANBORN, S. B., Rev. Mr. Eaton's.
*Instructor in Mechanical Engineering.*

EDWIN A. START, A. M., Cor. ——— and Talbot Avenue.
*Instructor in History.*

FRANK T. DANIELS, A. M. B., 32 Summit Avenue, Somerville.
*Instructor in Civil Engineering.*

THOMAS WHITTEMORE, A. B., 372 Massachusetts Ave., Cambridge.
*Instructor in English.*

JOHN E. BUCHER, A. C., PH. D., 53 Francesca Ave., W. Somerville.
*Instructor in Organic Chemistry.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

EDGAR GARCEAU, M. D., Roxbury.
*Clinical Instructor in Gynæcology.*

EDWARD L. TWOMBLY, A. B., M. D., 406 Massachusetts Ave.,
*Clinical Instructor in Medicine.* Boston.

THEODORE HOUGH, A. B., PH. D., 72 Pinckney Street, Boston.
*Instructor in Physiology.*

FRANK G. WREN, A. B., West Hall, 4.
*Walker Special Instructor in Mathematics.*

E. CHANNING STOWELL, A. B., M. D., 69 Adams Street,
*Instructor in Children's Diseases.* Dorchester.

CHARLES C. STROUD, A. B., Dean Hall, 1.
*Instructor in Physical Training.*

ROBERT N. HARTMAN, A. B., PH. D., Fairmount Street, Medford.
*Instructor in Quantitative Analysis.*

HARRY GRAY CHASE, B. E. E., Dean Hall, 12.
*Instructor in Electrical Engineering.*

SAMUEL C. EARLE, A. M., Franklin Street, Somerville.
*Instructor in French and Assistant in English.*

GEORGE A. WEBSTER, M. D., 28 Greenwich Park, Boston.
*Instructor in Otology.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Instructor in Medical Chemistry.*

HOWARD S. DEARING, M. D., 607 Tremont Street, Boston.
*Instructor in Clinical Medicine.*

HERBERT W. WHITE, M. D., 161 Warren Street, Roxbury.
*Instructor in Clinical Medicine.*

WARREN F. GAY, M. D., 411 Marlboro Street, Boston.
*Instructor in Surgery.*

JOSEPH C. STEDMAN, M. D., 119 Sedgwick Street,
*Instructor in Rectal Diseases.* Jamaica Plain.

## LECTURERS, ASSISTANTS, AND OTHERS.

### College of Letters.

VIRGIL L. LEIGHTON, A. M., Dean Hall, 9.
*Assistant in Qualitative Analysis and Assaying.*

JOHN W. EDWARDS, S. B., West Hall, 20.
*Assistant in General Chemistry.*

ORLANDO F. LEWIS, A. B., Dean Hall, 8.
*Assistant in Modern Languages.*

HERBERT E. CUSHMAN, A. M., Divinity Hall, Cambridge.
*Assistant in Philosophy.*

CHARLES G. JORDAN, A. B., West Hall, 28.
*Assistant in Mathematics and Teacher in the Bromfield-Pearson School.*

CHARLES H. CHASE, S. B., Stoneham.
*Superintendent of Shops.*

FRED D. LAMBERT, PH. B., East Hall, 8.
*Assistant in Biology.*

WILLIAM R. WHITEHORNE, A. M., 14 Elmwood St., Somerville.
*Assistant in Organic Chemistry.*

OLIVE FRANCES MOAKLER.
*Instructor in Physical Training for Women.*

**Medical School.**

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene and Instructor in Nervous Diseases.*

WILLIAM A. WHITE, M. D., Roxbury.
*Lecturer on the Diseases of Children.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston.
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, M. D., 6 Bowdoin Square, Boston.
*Lecturer on Laryngology.*

FRED S. RADDIN, M. D., Chelsea.
*Lecturer on Genito-Urinary Surgery.*

GEORGE A. BATES, D. D. S., Auburndale.
*Lecturer on Histology.*

CHARLES D. KNOWLTON, M. D., Boston.
*Demonstrator of Anatomy.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

JOHN I. FRENCH, M. D., Woburn.
*Assistant in Materia Medica and Therapeutics.*

S. P. COTTRELL, M. D., Hotel Oxford, Boston.
*Assistant in Gynæcology.*

PATRICK F. KELLEHER, M. D., City Hospital, Boston.
*Prosector of Anatomy.*

FRED STANLEY GRIFFIN, M. D., Watertown.
*Assistant in the Theory and Practice of Medicine.*

### Divinity School.

HENRY I. CUSHMAN, D. D., Providence, R. I.
*Lecturer on Methods of Biblical Study.*

FREDERIC W. HAMILTON, A. M., Roxbury.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B. D., Roxbury.
*Lecturer on Character and the Ministry.*

## OTHER OFFICERS.

HEMAN A. DEARBORN, A. M., 72 Professors Row.
*Registrar.*

WILLIAM A. START, A. M., Cor. ———— and Talbot Avenue.
*Bursar.*

HELEN L. MELLEN, 126 Packard Avenue.
*Librarian.*

ETHEL MUNROE HAYES, A. B., 252 Medford St., Somerville.
*Assistant Librarian.*

JOHN P. MARSHALL, A. M., 48 Professors Row.
*Director of the Museum.*

CHARLES C. STROUD, A. B., Dean Hall, 1.
*Director of the Gymnasium.*

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Medical Director of the Gymnasium.*

CHARLES R. GRAY, Medford.
*Superintendent of Buildings.*

### Proctors.

JOHN W. EDWARDS, West Hall, West.
FRANK G. WREN, West Hall, East.
VIRGIL L. LEIGHTON, Dean Hall.
FRED D. LAMBERT, East Hall.

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### Board of Editors.

THE PRESIDENT, *Ex-Officio.*

———— ————. Professor Dolbear.
Professor Knight. Professor Kingsley.

# Students.*

## GRADUATE DEPARTMENT.

### Fellows.

SHAW, ELIZABETH . . . . *Mattapoisett* . . Metcalf Hall, 15.
*A. B., Smith College*, 1896. *First Year. Biology. Miner Fellow in Natural History.*

WINSLOW, GUY MONROE . . *Barton Landing, Vt.* 105 Porter St., Somerville.
*A. B.* 1895. *Second Year. Biology. Olmstead Fellow in Natural History.*

### Resident Students.

Edwards, John Williams . . *Delaware, O.* . . West Hall, 20.
*B. S., Ohio Wesleyan Univ.*, 1895. *Second Year. Chemistry. Assistant in General Chemistry.*

Lambert, Fred Dayton . . . *Muscatine, Iowa.* . . East Hall, 8.
*Ph. B.*, 1894. *Third Year. Biology. Assistant in Biology.*

Leighton, Virgil Louis . . . *West Falmouth, Me.*, Dean Hall, 9.
*A. B., Tufts*, 1894; *A. M., University of Kansas*, 1895. *Second Year. Chemistry. Assistant in Qualitative Analysis and Assaying.*

Sanborn, Herbert Charles, . *Winchester* .
*Ph. B., Boston University*, 1896. *First Year. Modern Languages.*

## COURSES IN ARTS AND SCIENCES.

In the following list the course pursued by each student is indicated by the italic letters immediately following the name. The abbreviations are as follows: Courses leading to the degree of A. B., *a b;* to the degree of Ph. B., *ph.;* to the degree of S. B.,—in Civil Engineering, *c e;* in Electrical Engineering, *e e;* in Mechanical Engineering, *m e;* and in the first two years of the Engineering Courses, before the differentiation of studies, *e;* to the degree of S. B., through the Science Courses,—in General Science, *sc;* in Biology, *bi;* in Chemistry, *ch;* and Medical Preparatory, *m p.*

*The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

## Senior Class.

| | | |
|---|---|---|
| Barden, Henrie Clark, *e e* | *No. Attleboro* | East Hall, 21. |
| Blanchard, Lem Gale, *a b* | *Tufts College* | West Hall, 16. |
| Brown, Helen Elizabeth, *a b* | *Waltham* | Metcalf Hall, 4. |
| Browning, Charles Augustus, *e e,* | *Somerville* | East Hall, 21. |
| Butterfield, John McArthur, *a b,* | *Revere* | |
| Davis, Horace Amos, *ph* | *Dorchester* | Θ Δ X House. |
| Day, John Boynton Wilson, *a b,* | *Charlestown* | West Hall, 3. |
| Dyer, Florence Gertrude, *a b,* | *Medford* | 9 Everett St. |
| Edmands, John Stetson, *c e* | *Somerville* | 86 Avon St. |
| Fenton, Robert Hall, *c e* | *Willimantic, Conn.* | Δ T House. |
| Gale, Frank Randall, *a b* | *Barre, Vt.* | West Hall, 16. |
| Garcelon, Herbert Irving, *m e,* | *W. Somerville* | East Hall, 21. |
| Gardner, Lucie Marion, *a b* | *4 Lynde St., Salem.* | |
| Graves, Charles Brown, *e* | *Marblehead* | Δ T House. |
| Green, Charles Boden, *a b* | *Lynn* | Dean Hall, 12. |
| Hewitt, Ernest John, *a b* | *So. Royalton, Vt.,* | West Hall, 3. |
| Hill, George William, *e e* | *Stoneham* | Dean Hall, 12. |
| Hodgdon, Georgia Louise, *a b,* | *Waltham* | Metcalf Hall, 14. |
| Hodge, Edith Louise, *a b* | *Franklin* | Metcalf Hall, 10. |
| Hodgman, Arthur Ames, *a b,* | *E. Somerville* | West Hall, 24. |
| Howe, Wilson Tyler, *c e* | *East Brookfield,* | West Hall, 27. |
| Knowlton, John Wellington, *a b,* | *New Bedford* | Θ Δ X House. |
| Lane, Harry Alfred, *c e* | *Foxboro* | Δ T House. |
| Parks, Warren Stone, *a b* | *Hudson* | Δ T Δ House. |
| Perry, Carlton Albert, *a b* | *Cooperstown, N. Y.,* | West Hall, 22. |
| Plumb, Max Alaric, *sc* | *Rocky Hill, Conn.,* | West Hall, 2. |
| Putnam, Frank Wendell, *bi* | *Charlestown* | Δ T House. |
| Randlett, Fred Morse, *e e* | *Lawrence* | Dean Hall, 10. |
| Richardson, George Edward, *bi,* | *Lowell* | West Hall, 17. |
| Russell, Howard Irving, *e e* | *W. Somerville* | East Hall, 21. |
| Sanford, Rollin Brewster, *a b,* | *Albany, N. Y.* | Θ Δ X House. |
| Start, Alaric Bertrand, *a b* | *Tufts College* | Mr. Start's. |
| Thayer, Arthur Ellis, *e e* | *W. Somerville* | East Hall, 21. |
| White, Winthrop Warner, *a b,* | *Brooklyn, N. Y.* | Dean Hall, 13. |
| Williams, Franklin Bates, *a b,* | *Roxbury* | Dean Hall, 7. |

## Junior Class.

| | | |
|---|---|---|
| Ahern, George Edward, *c e* | *Arlington* | Middle Hall, 5. |
| Anderson, Malcolm Campbell, *a b,* | *W. Somerville,* | 18 Farragut Ave. |
| Andrews, Herbert Woodbury, *c e* | *Lynn* | East Hall, 26. |
| Arnold, John Emerson, *a b* | *Braintree* | Δ T House. |
| Avery, Elwood, *a b* | *Everett* | West Hall, 16¼. |

| | | |
|---|---|---|
| Bancroft, Irving Reed, *ph* . | *Woburn* . . . | West Hall, 22. |
| Bartlett, Ethel Townsend, *a b*, | *Somerville* . . | 113 Highland Ave. |
| Boomer, Perley Eugene, *a b*, | *Medford* . . . | 150 Boston Ave. |
| Burbank, Ralph Lyman, *ch* . | *Medford* . . . | East Hall, 27. |
| Capen, Samuel Paul, *a b* . . | *Tufts College* . | 8 Professors Row. |
| Clark, Warren Stewart, *e e* . | *St. Albans, Vt.* . | West Hall, 7. |
| Cousens, John Albert, *a b* . | *Brookline* . . . | Δ T Δ House. |
| Crowley, Daniel Francis, *c e* . | *Medford* . . . | East Hall, 21. |
| Daniels, George Emory, *a b* . | *Franklin* . . . | Dean Hall, 6. |
| Donaldson, James Frank, *a b*, | *Salem* . . . . | West Hall, 28. |
| Evans, Mary Eliza, *a b* . . . | 16 *Wright St., Stoneham.* | |
| Flint, Marion Lenore, *a b* . . | *Spring St., Bedford.* | |
| French, Edmund Merritt, *c e*, | *W. Hingham* . | East Hall, 26. |
| Gifford, Fannie Crocker, *a b* . | *Provincetown* . | Metcalf Hall, 6. |
| Grant, Beatrice Alexandra, *a b*, | 29 *Pleasant St., Woburn.* | |
| Graves, Wallace Humphrey, *ch*, | *Bangor, Me.* . | East Hall, 11. |
| Hammond, Roland, Jr., *a b* . | *Brockton* . . . | West Hall, 22. |
| Harwood, George Alec., *c e* . | *Cambridge* . . | West Hall, 16½. |
| Healey, Rolla Edwin, *e e* . . | *Claremont, N. H.* | Δ T Δ House. |
| Huston, Milton, *ch* . . . . | *W. Falmouth, Me.* | East Hall, 9. |
| Johnson, Edward Dunbar, *a b*, | *Methuen* . . . | West Hall, 19. |
| Jones, Guy Edward, *e e* . . | *Marlow, N. H.* . | 7 Clarendon Ave., W. Somerville. |
| Jones, Willie Parker, *a b*, . . | *Stoneham* . . . | West Hall, 24. |
| Maddocks, John Arthur, *c e* . | *Boothbay Harbor, Me.* | West Hall, 29. |
| May, Benjamin Dexter, *a b* . | *Hudson* . . . | Δ T Δ House. |
| Merrill, Harriette Johnson, *a b*, | *E. Eddington, Me.* | Metcalf Hall, 11. |
| Mitchell, Stephen Clarence, *e e*, | *Hull* . . . . | Dean Hall, 10. |
| Moore, Willis Albert, *a b* . . | *Melrose* . . . | East Hall, 29. |
| Olmsted, Elmer Sheridan, | *Somerville* . . | West Hall, 31. |
| Patterson, Walter Arthur, *e e*, | *Waltham* . . . | West Hall, 11. |
| Peirce, Frank Lincoln, *a b* . | *Brimfield* . . . | Δ T House. |
| Ransom, Clara, *a b* . . . . | *Tufts College* . | 80 Professors Row. |
| Ransom, William Richard, *a b*, | *Tufts College* . | 80 Professors Row. |
| Rowbotham, George Walter, *e e*, | *Boston* . . . | Θ Δ X House. |
| Russell, James Porter, *a b* . | *Farmington, Me.* | Δ T House. |
| Schoolfield, Frank Robert, *e e*, | *Baltimore, Md.* . | East Hall, 1. |
| Shaw, Edwin Adams, *c e* . . | *W. Somerville* . | 18 Bellingham St. |
| Small, Sylvanus Griswold, *a b*, | *Baldwinville* . . | 14 Emery St. |
| Smith, Arthur Garfield, *a b* . | *N. Tunbridge, Vt.* | Δ T House. |
| Smith, Simeon Conant, *a b* . | *Provincetown* . | Δ T Δ House. |
| Stebbins, Katherine Louise, *a b*, | *W. Somerville* . | 30 Day Street. |
| Sweet, Harold Edward, *a b* . | *Attleboro* . . . | Δ T House. |
| Titus, Anson Merrill, *c e* . . | *W. Somerville.* . | 10 Raymond Ave. |
| Tousey, Coleman, *a b* . . . | *Tufts College* . | 106 Professors Row. |

Town, Frederic Edward, *e e* . *Washington, D. C.* East Hall, 1.
Welch, Walter Frederick, *a b*, *Stoneham* . . . East Hall, 34.
Wells, Roy Titus, *e e* . . . *Foxboro* . . . Δ T House.
Whitman, Walter George, *a b*, *Norway, Me.* . East Hall, 14.

### Sophomore Class.

Barker, Fred Percy, *e* . . . *Waltham* . . . Middle Hall, 10.
Bartlett, Lewis, *e* . . . . *Marblehead* . . East Hall, 7.
Bean, Charles Alvin, *a b* . . *Hudson* . . . Dean Hall, 11.
Bradbury, Fannie Eliza, *ph* . *Milford* . . . Metcalf Hall, 3.
Brightman, Carl Gordon, *e* . *Round Pond, Me.*, East Hall, 14.
Buss, Arthur Stacey, *e* . . . *Medford* . . . East Hall, 13.
Carleton, Grace Willis, *a b* . *Wakefield* . . . Metcalf Hall, 1.
Carpenter, Edwin King, *a b* . *West Medford* . East Hall, 13.
Christian, Leroy Bernard, *e* . *Auburn, Me.* . Middle Hall, 9.
Clapp, Albert Lewis, *ch* . . *Marblehead* . . East Hall, 7.
Clough, Harry Wescott, *a b* . *Lowell* . . . . Dean Hall, 6.
Cousens, Kate Elizabeth, *a b*, *Brookline* . . Metcalf Hall, 12.
Cowan, Frank Joseph, *a b* . *Farmington, Me.* East Hall, 31.
Cutler, Augustus Leon, *e* . . *Wakefield* . . West Hall, 5.
Davis, Mervin Nathaniel, *e* . *Haverhill* . . . East Hall, 10.
Doane, Ernest Stanley, *ph* . *Marblehead* . . Δ T House.
Eaton, Mary Helen, *a b* . . 954 *Main Street, No. Woburn.*
Eaton, Minnie Laurette . . *Tufts College* . Rev. Mr. Eaton's.
Eveleth, Charles Wonson, *m p*, *Marblehead* . . West Hall, 6.
Forster, George Fleming, *a b*, *Lawrence* . . . East Hall, 31.
Gage, Isaac Bradlee, *a b* . . *W. Medford* . . Dean Hall, 13.
Goudey, Grace Evelyn, *a b* . 53 *Buckman Street, Everett.*
Griffiths, Willis Wentworth, *e*, *Medford* . . . East Hall, 6.
Griswold, Fred Fay, *e* . . . *So. Manchester, Conn.* East Hall, 2.
Hall, Samuel Thomas, *e* . . *Sharon* . . . . East Hall, 6.
Heath, George Byron, *ph* . . *Calais, Me.* . . West Hall, 30.
Holmes, Harry Emery, *e* . . *Medford* . . . East Hall, 6.
Howe, Frank Merrill, *a b* . . *So. Weymouth* . East Hall, 23.
Hunter, Leslie Erastus, *e* . . *Essex Junction, Vt.* East Hall, 32.
Kent, Ira Rich, *a b* . . . . *Calais, Vt.* . . West Hall, 25.
Knight, Isabella Gertrude, *a b*, *Tufts College*, . 114 Professors Row.
Knowlton, Frank Warren, *a b*, *New Bedford* . East Hall, 15.
Lane, Grace Harvey, *a b* . . *W. Medford* . . 66 Brooks St.
Lawrence, Bertha Faustina, *bi*, *Stowe* . . . . Metcalf Hall, 13.
Lewis, Florence May, *a b* . . *Main St., Stoneham.*
Litchfield, Harry, *e* . . . . *Fitchburg* . . . West Hall, 31.
Lovering, Frank Woods, *sc*, . *W. Medford* . . Dean Hall, 13.
Mange, John Isaac, *e* . . . *Kingston* . . . East Hall, 4.

Marble, Ernest Gilman, *e* . . *Methuen* . . . West Hall, 19.
Marvin, Charles Remington, *a b*, *Roxbury* . . . West Hall, 25.
Mason, William Madison, *ch*, *Washington, D. C.*, Θ Δ X House.
Meader, Edgar Keene, *m p* . *Marblehead* . . West Hall, 30.
Morton, George Fisher, *bi* . *Cambridge* . . Day Street.
Morton, Anna Lucy, *sc* . . *Cambridge* . . Day Street.
Nichols, Arvilla Florence, *a b*, *Somerville* . . 505 Broadway.
Perkins, Llewellyn Rood, *e* . *So. Woodstock, Vt.*, Middle Hall, 7.
Philbrook, Etta Frances, *a b* 85 *Ferry St., Everett.*
Prentis, Thomas . . . . 118 *Franklin St., Melrose.*
Rand, Charles Henry, *e* . . *Waltham* . . . West Hall, 14.
Rich, Edward Wellington, *a b*, *West Acton* . . East Hall, 15.
Richardson, Herbert Hay, *a b*, *Stoneham* . . . East Hall, 17.
Robinson, George Nelson, *e* . *Winchester* . . East Hall, 29.
Shaw, Ellen Eddy, *m p* . . 14 *South St., Woburn.*
Smith, Forster Hanson, *a b* . *Lowell* . . . . West Hall, 32.
Smith, William Boulay, Jr., *e*, *New Bedford* . East Hall, 22.
Sturtevant, Morton Adams, *a b*, *Stoneham* . . . West Hall, 12.
Trow, Harris Cushman, *e* . . *Kingston* . . . East Hall, 23.
Wallace, John Eugene, *e*, *Waterloo, P. Q., Canada*, East Hall, 2.
Watson, Clara Eva, *a b* . . *Nashua, N. H.* . Metcalf Hall, 5.
White, Helen Ridler, *a b* . . *Pawtucket, R. I.* Metcalf Hall, 11.
Whitney, Arthur Bryant, *a b*, *Milford* . . . Dean Hall, 9.
Wiley, Harry Farrington, *a b*, *Peabody* . . . East Hall, 4.
Yeaton, Mary Frances, *a b* . 22 *Pond St., Stoneham.*

### Freshman Class.

Abbott, Stephen Edward, *e* . *Andover* . . . Middle Hall.
Allison, Fannie Gage, *a b* . 50 *Winn St., Woburn.*
Andrews, Charles Masson, *sc*, *Newtonville* . . Δ T House.
Anthony, Madge Agnes, *a b* . *Adams* . . . . Metcalf Hall, 6.
Atkinson, Martha Louise, *a b*, *Laconia, N. H.* . Mr. Start's.
Barron, Elmer Walter, *a b* . *Charlestown* . . West Hall, 18.
Bellows, Louise Jane, *a b* . *Spencer* . . . Mr. Start's.
Brown, Louis Raymond, *a b* . *Putnam, Conn.* . West Hall, 9.
Brooks, Joseph Bradford, *e* . *Portland, Me.* . East Hall, 11.
Burkett, Helen Loretta, *a b* . *Somerville* . . 85 Mt. Vernon St.
Burrage, Elizabeth Theresa, *a b*, *Somerville* . . 20 Dartmouth St.
Burrage, John Otis, *e* . . . *Lowell* . . . . East Hall, 25.
Burton, Charles Ernest, *e* . *Somerville* . . 2 Homer Square.
Campbell, Daniel Raymond, *a b*, *Bellows Falls, Vt.*, West Hall, 15.
Chadwick, Henrie Francis, *e* . *Marion* . . . East Hall, 30.
Chase, Fred Marcellus, *ph* . *Newtonville* . . 75 Columbus Ave., Somerville.

Clark, Carrie Lois, *ph* . . . *West Brattleboro, Vt.*, Metcalf Hall, 8.
Clark, Geo. Appleton, *a b* . . *Somerville* . . 49 Brastow Ave.
Clark, John Putnam, *a b* . . *Jamaica Plain* . East Hall, 30.
Cole, Amy Lovett, *ph* . . . *Somerville* . . 13 Lincoln St.
Conn, Wallace Thompson, *ch* *Woburn* . . . East Hall, 25.
Cooper, Orville, *e* . . . . *Picton, Canada.*
Cushman, Clarence Alphonso, *ph*, *Somerville* . . Dean Hall, 11.
Cummings, Allen, *e* . . . *Woburn* . . . East Hall, 20.
Daniels, Ora George, *a b* . . *Chelsea* . . . Dean Hall, 2.
Day, Mary Grace, *ph*, . . . *Hinsdale, N. H.*, Metcalf Hall, 2.
Davis, Ethel, *ph* . . . . . *Yarmouthport* . Metcalf Hall, 9.
Emerson, Jason Draper, *a b* . 60 *Garland St., Everett.*
Fay, Ethel Lincoln, *a b* . . *Tufts College* . Prof. Fay's.
Flaherty, William Henry, *e* . *Somerville* . . 261 Washington St.
Gage, Lucy Helen, *a b* . . . 21 *Prescott St., West Medford.*
Gibson, Elbert Eugene *e* . . *Cherry Valley, Can.* East Hall, 16.
Harmon, Ethel Bryant, *a b* . *Tufts College* . Prof. Harmon's.
Hart, Lester Stanley, *a b* . . *Adams* . . . . East Hall, 33.
Haynes, Lewis Henry, *e* . . *Newtonville* . . East Hall, 24.
Hildreth, Guy Augustus. *a b*, *Gardiner, Me.* . Dean Hall, 8.
Hill, Adella Richards, *a b* . . *Somerville* . . 22 Grand View Ave.
Hill, George Bond, *a b* . . . *Lowell* . . . . Dean Hall, 5.
Hodges, Gilbert, Jr., *e* . . . *Medford* . . . West Hall, 23.
Holmes, Albert Bourne, *e* . *Sharon* . . . Δ Υ House.
Hunting, Ethel Parker, *a b* . *Somerville* . . 47 Vinal Ave.
Ingalls, Mary Anna, *a b* . . *Auburn, Me.* . Conwell Ave.
Ingalls, Nowell, *a b* . . . . *Swampscott* . . Dean Hall, 6.
Kendall, Ralph Talbot, *e* . . *Portland, Me.* . Dean Hall, 1.
Kirkpatrick, Charles Darrow, *Charlestown* . . East Hall, 34.
Knapp, Ralph Hastings, *e* . *Boston* . . . . East Hall, 3.
Lamb, Arthur Beckett, *a b* . *Attleboro* . . . East Hall, 19.
Lamb, Roland Manchester, *a b*, *Attleboro* . . . East Hall, 19.
Lane, Elizabeth Caldwell, *a b*, *West Medford* . 66 Brooks St.
Locke, William Lorenzo, *e* . *Watertown* . . East Hall, 20.
Lovell, Ernest Mills, *e* . . . *Wayland.*
Mason, Grace Agnes, *a b* . . *West Somerville*, 5 Mason Ave.
McDuffee, Edgar Jerome, *e* . *Bellows Falls, Vt.*, West Hall, 14.
Metcalf, Herbert Lester, *e* . *Franklin* . . . East Hall, 9.
Noyes, Howard Wayland, *e* . *West Newbury* . Dean Hall, 14.
Parker, Laurence Houghton, *a b*, *Newtonville* . Δ Υ House.
Pettengill, Clarence Albert, *ch*, *Hudson* . . . Dean Hall, 11.
Phipps, Ross Elliot, *e* . . . *Watertown* . . Δ Υ House.
Raby, John William, *e* . . *So. Manchester, Conn.*, East Hall, 10.
Restall, Charles Henry, *e* . . 38 *Carmel St., Chelsea.*
Root, Francis Solomon, *e*, *East Douglass*, 120 Dartmouth St, Boston.

Shipman, Margaret Maude, *ph*, *Lewistown, Mont.* 101 Talbot Ave.
Spaulding, Alice Howard, *a b*, *Somerville* . . 10 Putnam St.
Spaulding, Ernest Leonard, *a b*, *Jaffrey, N. H.* . 11 William St, Somerville.
Spooner, Harriet Maria, *a b* . *Hinsdale, N. H.*, Metcalf Hall, 2
Tarbox, Carl Clifton, *a b* . . *Biddeford, Me.* . East Hall, 33.
Thomas, Irving B., *a b*. . . *So. Manchester, Conn.*, East Hall, 5.
Tousey, Ruth, *a b* . . . . *Tufts College* . 106 Professors Row.
Tuttle, Charles Percy, *ph* . *Wakefield* . . West Hall, 12.
Vincent, Shelley Davis, *a b* . *Danbury, Conn.*, West Hall, 12.
Wagner, Robert Edward, *e* . *Provincetown* . East Hall, 24.
Washburn, Frank De Witt, *a b*, *Somerville* . . East Hall, 5.
Waterman, Harry Oliver, *a b*, *Jamaica Plain* . East Hall, 28.
White, Glem William, *a b* . *Ludlow, Vt.* . . East Hall, 12.
White, Abbie Park, *a b* . . *Taunton* . . . Metcalf Hall, 7.

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Dearborn, Luther Gould, *a b* . *Somerville* . . East Hall, 16.

### Special Students.

In the following list the Roman numeral indicates the year of attendance; the italicized department name is that of the student's major department; and the following subjects are those taken by the student for the current year. Abbreviations: Astron., Astronomy; Biol., Biology; Chem., Chemistry; Civ. Engin., Civil Engineering; Draw., Drawing; Elec., Electricity; Elec. Lab., Electrical Laboratory; El. Mech., Elements of Mechanism; Eng., English; Eng. Lit., English Literature; Geol., Geology; Germ., German; Hist., History; Math., Mathematics; Mech., Mechanics; Mech. Engin., Mechanical Engineering; Phil., Philosophy.

Allen, Charles Rollin . . . *Barre, Vt.* . . West Hall, 15.
I. *Math.* An. Geom., Mach. Draw., El. Mech., Phys. 1, Chem. 1, Survey.
Atwood, Louise Russell . . *Medford* . . . 4 Garden St.
IV. *Eng. Lit.* Eng. Lit. 6, French 4, Pol. Sci. 1, Music 4.
Avery, William Yale . . . *Providence, R. I.* Dean Hall, 14.
I. *Math.* Alg., Sp. Geom., Trig., An. Geom., Survey., El. Mech., Phys. 1, Germ. 1, Rhet.
Bartlett, Alice Mae . *No. New Portland, Me.* Metcalf Hall, 15.
II. *Math.* Eng. 1, French 1, 2, Hist. 1 Math. 3, 5, Physics 1, 6, Astron. 1.
Brown, Elizabeth C. . . . 167 *Elm St., W. Somerville.*
I. *Eng. Lit.* Eng. Lit. 1, 2, Germ. 1, French 2, Hist. 1, Music 1.

Brown, Luther Ainsley . . 67 *Broad St., Lynn.*
I. *Biol.* Germ. 3, Physics 1. Chem., 1, Biol. 2, 4.

Carvill, Lizzie Maud . . . *Somerville.* . . Metcalf Hall, 14.
II. *Germ.* Germ. 3, Comp., French 1, Physics 1, Chem. 1, Biol. 2, Music 1.

Clark, Irving Stockton . . . 14 *Greenwich St., Boston.*
III. *Elec. Engin.* Cal., French 4, Elec., Elec. Lab., St. Engin., Eng. Lit. 1, Qual. Anal.

Coughlin, Frank William . . *Lowell.* . . .
I. *Math.* Alg., Sp. Geom., Trig., Mech. and Freeh. Draw., Carpent. and Turn., French 1, Rhet.

Kingsbury, Walter Warren . *West Medford* . East Hall, 27.
I. *Biol.* Eng. 1, Hist. 1, Math. 1, Physics 1, Biol. 1, Geol. 1.

Parke, Robert Hayward . . *Monson* . . . East Hall, 6.
III. *Elec. Engin.* Calc., Mach. Draw., Elec., Elec. Lab., St Engin., Qual. Anal., Eng. Lit. 1, French 3, Comp.

Thompson, Walter Frank . . *Plymouth* . . Dean Hall, 5.
I. (Buchtel Coll. 1894-96). *Pol. Science.* Eng. 2, Germ. 2, French 1, Hist. 5, Pol. Sci. 1., Phil. 2.

Thompson, Florence Emerson *Middleboro* . . Metcalf Hall, 7.
I. *Math.* Math. 1, Physics 1. Chem. 1, Biol. 1, Geol. 1, 2.

Turner, Harriette Alice . . *Tufts College* . Metcalf Hall.
II. *Eng. Lit.* Eng. Lit. 1, 2, 4 (a), Music 1.

Wallace, Edward Darling . . *Milford, N. H.* . Fairmount Ave., W. Somerville.
I. *Chem.* Alg., Chem. 2, 4, Carpent. and Turn., Mach. Draw.

Whittle, John Augustus . . *No. Weare, N. H.* Δ Υ House.
I. *Biol.* Eng. 1, French 1, Physics 1, Chem. 1, Biol. 2.

Webber, Abbot Reed . . . *Bedford* . . . 28 Professors Row.
I. *Math.* Eng. 1, Or. 1, Germ. 1, French 3, Hist. 1, Math. 1, Physics 1.

Worthen, Carrie Leeds . . *Melrose* . . . Metcalf Hall, 16.
II. *Germ.* Germ. 4, Comp., French 2, 3, Italian 1, Greek 7, Physics 1.

## DIVINITY SCHOOL.

### Senior Class.

Bartlett, Alden Eugene . . *Newtonville* . . Paige Hall, 30.

Benton, Herbert Elmon . . *Annisquam* . . Paige Hall, 13.
A. B., 1894.

Bissell, Flint Mandrin . . *Wellesley* . . . Paige Hall, 23.

Earle, Augusta Gertrude . . *Somerville* . . 8 Franklin St.

Eills, John . . . . . *Lowell* . . . . Boston Ave.

Fortier, George Ferdinand . *Somerville* . . Paige Hall, 12.

Leavitt, Fenwick Lasselle . *Auburn, Me.* . Paige Hall, 19.
Macduff, Isabella Stirling . *Claremont, N. H.* Boston Ave.
Powers, Mariette . . . . *Rumford Falls, Me.*, Metcalf Hall, 10.
Robbins, Clarence Guy . . *Melrose* . . . Paige Hall, 31.
Smith, Nancy Wiley Paine . *Tufts College* . Boston Ave.
Taylor, Fred Allan . . . . *W. Somerville* . 38 Wallace St.
A. B., 1886.
Thompson, George Linnæus . *Stafford, Conn.* . Paige Hall, 6.
Walker, Fred Storer . . . *Portland, Me.* . Paige Hall, 7.
A. B., 1894.

### Middle Class.

Austin, Fannie Elmina . . *Akron, O.* . . 37 Sawyer Ave.
Ball, Dwight Ambrose . . . *Bellows Falls, Vt.*, Paige Hall, 22.
Barney, Edward Mitchell . . *Lynn* . . . . Paige Hall, 18.
Eaton, Clarence Livingstone, *Worcester* . . Paige Hall, 24.
A. B., 1895.
Mathew, Tacy . . . . . *Wilmington, O.*, 37 Sawyer Ave.
A. B., Buchtel College, 1894
Milton, Lucy Almira . . . *Waverley* . . . 37 Sawyer Ave.
Reifsnider, Edson . . . . *Chicago, Ill.* 37 Sawyer Ave.
Rouillard, Harry Enoch . . *Hinsdale, N. H.*, Paige Hall, 1.
Taylor, William John . . . *Minneapolis, Minn.*, Paige Hall, 8.
B. S., Univ. of Minnesota, 1895.

### Junior Class.

Cheever, Ralph Holbrook . . *Portsmouth, N. H.*, Paige Hall, 36.
A. B., 1896.
Marvin, Reginold Kent . . *Roxbury* . . . Paige Hall, 3.
A. B., 1896.
Patterson, Charles Franklin . *Medford* . . . Paige Hall, 25.
Petty, Charles Ellsworth . . *Akron, O.* . . Paige Hall.
A. B., Buchtel College, 1896.

### Sub-Junior Class.

Bellows, Walter Edward . . *Spencer* . . . Paige Hall, 17.
Lewis, Lester Lothrop . . *Providence, R. I.*, Paige Hall, 5.
Pennoyer, Charles Henry . . *No. Hatley, Quebec*, Paige Hall, 29.
Spear, Stanley Gates . . . *Hartland, Vt.* . Paige Hall, 32.

### Special Students.

Emerson, Mabel Irene . . . 13 *Sherman Street, Roxbury.*
Goldthwaite, Elizabeth Holt, *Danvers.*
Kimball, Frances Augusta . *Poland, Me.* . . Boston Ave.
Powell, Hannah Jewett, *Waterville, Me.*, 424 Medford St., Somerville.

## MEDICAL SCHOOL.

### Senior Class.

| | |
|---|---|
| Avedisian, Hagop der | *Avon.* |
| Bailey, Ernest Harry | *Wellington* |
| Bartlett, Robert Lander, D. M. D. | *Lynn.* |
| Birmingham, Louis Howland | *Malden.* |
| Bourn, Cora E. | *Providence, R. I.* |
| Bowman, Anthony William | *Charlestown.* |
| Brooks, Simon Pomeroy, A. B. | *Boston.* |
| Burgess, Charles James | *Lawrence.* |
| Cleary, James, D. D. S. | *Leominster.* |
| Cushing, Charles Baldwin | *Cohasset.* |
| Eldridge, Jerrie A., M. D. | *Wareham.* |
| Fitzgerald, William Henry, M. D. | *Middletown, Conn.* |
| Ford, Michael Angelo | *Rockland.* |
| Hart, Francis Joseph | *Boston.* |
| Hayden, Lewis Brooks | *Augusta, Me.* |
| Hearn, Thomas Henry | *Boston.* |
| Heaton, Thomas Henry | *Cambridge.* |
| Hickey, Lawrence Joseph | *Roxbury.* |
| Homer, John, M. D. | *Newburyport.* |
| Hopkins, Bertrand Hiram | *West Medford.* |
| Howland, Edgar Joseph | *Somerville.* |
| Huck, Marie Estelle, M. D. | *Austin, Texas.* |
| Jelalian, Hairabed S. | *Dardanelles, Turkey.* |
| Johnson, Henry Peyton | *Richmond, Va.* |
| Mackintosh, Elizabeth Ellard | *Medway.* |
| Mackintosh, Ernest Robert | *Brookline.* |
| Macy, Fred Stevens | *Malden.* |
| McGee, Fannie Maria | *Waban.* |
| McLean, William Corbett | *Everett.* |
| McNeish, Alexander | *Everett.* |
| Merrill, Stephen Douglass | *Boston.* |
| Morse, Frederick Otis | *East Boston.* |
| Murphy, Jeremiah Edward | *Somerville.* |
| Orr, Samuel Sanford | *Cambridge.* |
| Patrick, Thomas W., M. D. | *Boston.* |
| Peabody, Sophia Reed | *Lawrence.* |
| Peck, Luke Baker | *Brookline.* |
| Place, Ralph Waldo | *Boston.* |
| Proctor, John Donald | *Keene, N. H.* |
| Pigott, Thomas Edmond | *Winthrop.* |
| Redmond, Thomas Henry | *Lawrence.* |
| Riley, Elizabeth Angela | *Chelsea.* |

| | |
|---|---|
| Russell, Frederick James | *New Bedford.* |
| Sexton, James Henry, Jr. | *Malden.* |
| Shaw, Thomas Wignall | *Somerville.* |
| Shershefsky, Cecilia | *Portland, Me.* |
| Shisler, William Henry | *Fort Erie, Ont.* |
| Simpson, Joseph | *Hartford, Conn.* |
| Snow, Henry Curtis Butler | *Buzzard's Bay.* |
| Stevens, Juliet Nora | *Chicago, Ill.* |
| Story, Helen Louise | *Laconia, N. H.* |
| Sullivan, Francis Augustus | *Cambridge.* |
| Walker, Alba Gustavus | *Boston.* |
| Young, James Alexander | *Boston.* |

**Middle Class.**

| | |
|---|---|
| Ayers, Seabury Rogers | *Roxbury.* |
| Baker, Lewis Forrester | *Wollaston.* |
| Beal, Herman Alaric | *Mattapan.* |
| Berg, Tekla | *Lynn.* |
| Bertrand, Alexis Evariste | *Lowell.* |
| Caisse, George Emile | *Lowell.* |
| Corbett, Francis Alfred | *Newport, R. I.* |
| Cote, Honore Joseph | *Boston.* |
| Crittenden, Harrison Murray | *Haverhill.* |
| Dalton, Henry | *Cambridge.* |
| Davis, Winnifred Puffer | *Charlestown.* |
| Donaldson, Olive Kate | *Winthrop.* |
| Dow, David Crocket | *Cambridgeport.* |
| Fitzgerald, Charles J. | *Middletown, Conn.* |
| Flynn, John Leo | *Cambridge.* |
| Foster, Harry Ruffie | *Chelsea.* |
| Garrett, Frank Steele | *New York City, N. Y.* |
| Gilbert, Frank Leslie | *Boston.* |
| Gillan, William Frederick Aloysius | *Pawtucket, R. I.* |
| von Groll, Maximilian Charles, Ph. G. | *Roxbury.* |
| Hall, Walter Davis | *Medford.* |
| Hamblen, Edward Everett | *Bedford.* |
| Harris, Sylvia Fowler | *Berkeley, Cal.* |
| Herrick, Florence Adelaide | *Stoneham.* |
| Hinckley, James William | *Boston.* |
| Holland, William Timothy | *Winchester.* |
| Holmes, Luke Marvin | *New Haven, Conn.* |
| Ives, Henry | *Boston.* |
| Joslin, Edward Herbert | *Keene, N. H.* |
| Judkins, Anna Gertrude | *Boston.* |

| | |
|---|---|
| Kelley, Joseph Henry Hart | *Charlestown.* |
| Kingsbury, Albert Edward, A. M. | *Boston.* |
| Ladd, Fred Eugene | *Brockton.* |
| Lane, Frank Ellsworth | *Cambridgeport.* |
| Ledwell, Richard John | *Boston.* |
| Libby, Mary Gordon | *Boston.* |
| Lilly, Thomas Eugene | *Lawrence.* |
| Lockwood, Charles Edwin | *Binghamton, N. Y.* |
| Lord, Herbert | *Berwick, Me.* |
| Martin, John B. | *Charlestown.* |
| Mayers, John Edward | *South Boston* |
| Meek, Edith R. E. | *Fall River.* |
| Petluck, Joseph | *Boston.* |
| Reid, Eustace Palmer | *Boston* |
| Rich, Herbert Lowell, Ph. B. | *Newton.* |
| Ryan, George Whitehouse | *Dorchester.* |
| Santosuosso, Joseph | *Boston.* |
| Schofield, Otho Lester | *Charles River Village.* |
| Siske, Harry Edward | *Palmer.* |
| Slack, Francis Hervey | *North Abington.* |
| Smith, Alfred Charles | *Malden.* |
| Stevens, Ruey Bartlett | *Roslindale.* |
| Stodder, Charles William | *Roxbury.* |
| Street, Lionel A. B. | *Boston.* |
| Stroud, Charles Crawford, A. B. | *Tufts College.* |
| Thompson, Peter Hunter | *Boston.* |
| Tobey, Nathan Paul | *Cambridgeport.* |
| Truworthy, Harry Leslie | *Newport, Me.* |
| Webber, Sarah Southworth | *West Newton.* |
| Wellington, Mary E. | *New York City.* |
| Wilson, Almira Janette | *Boston.* |
| Wilson, Joseph Aloysius | *Boston.* |
| Wood, Mary Anna | *Pittsfield.* |
| Woodhead, Raynor | *Central Falls, R. I.* |
| Young, Emma Elizabeth | *Acton, Me.* |

### Freshmen Class.

| | |
|---|---|
| Black, George Luke | *Lawrence.* |
| Bowens, Bruce Tucker | *Wilmington, Del* |
| Boynton, Henry Bullard | *West Townsend.* |
| Brown, Walter Haran | *Palmer.* |
| Burnham, Joseph Forrest | *Lawrence.* |
| Clay, Arthur Thomas Selman | *Halifax, N. S.* |
| Coriat, Isador Harry | *Roxbury.* |

| | |
|---|---|
| Cushing, Adelaide Olga | *Boston.* |
| Doucett, Frederick Luke | *Stoneham.* |
| Dunbar, Frank Herbert | *Mansfield.* |
| Fennell, William Hobin | *Lawrence.* |
| Forster, Robert William | *Lawrence.* |
| Gould, John Hogg | *Melrose.* |
| Gray, Alice Maud | *Dorchester.* |
| Greene, Eva Keith | *Malden.* |
| Hall, Rufus Hacker, A. B. | *Revere.* |
| Hamblen, Howard | *Somerville.* |
| Hannaford, Charles William | *Portsmouth, N. H.* |
| Hara, Edward Benedict | *Allston.* |
| Howe, Winfred Lewis | *Cambridgeport.* |
| Hughes, George F., Jr. | *West Somerville* |
| Jenkyns, Ebenezer Hammerton, Ph. D. | *Boston.* |
| Journeay, Warren William | *Boston.* |
| King, Arthur Wight | *Hyde Park.* |
| Larkin, Joseph Francis | *Woburn.* |
| Lay, Walter Siddons | *Whitman.* |
| Lewis, Marion | *Jamaica Plain.* |
| Lindquist, Carl August | *Brockton* |
| Lowell, Hannah | *Auburn, Me.* |
| Lowney, John Joseph | *Fall River.* |
| Lynds, Eleanor Belle | *Sackville, N. B.* |
| Mahern, John Joseph | *Woburn.* |
| Maney, John Joseph | *Methuen.* |
| McLeod, Scott | *Boston.* |
| McNamara, John James | *Brockton.* |
| Miles, Mary Ina | *Burlington, Vt.* |
| Milot, Wilfrid F. | *Taunton.* |
| Norton, George E. | *Cambridgeport.* |
| Pastor, Leonard Joshua | *Quincy.* |
| Patch, Jennie Edith | *Manchester, N. H.* |
| Pollard, Ella May | *Ashland, N. H.* |
| Price, Oscar Jay | *Milton.* |
| Pease, Charles Valentine | *Dorchester.* |
| Randall, W. J. | *Chelsea.* |
| Reilly, Lincoln Leonard | *Somerville.* |
| Rosa, Henry Anthony | *New Bedford.* |
| Saville, George Kittridge | *Boston.* |
| Smeltzer, James Finlay | *Boston.* |
| Stewartson, Charlotte Dodd | *Manchester, N. H.* |
| Swan, Leon Garland | *Lawrence.* |
| Trower, Arthur Henry | *South Boston.* |

| | |
|---|---|
| Unwin, George Thomas | *Somerville.* |
| Weil, Edna Helen | *Boston.* |
| Williams, Charles Edward | *Charlestown.* |
| Woodworth, John Dawson Roswell | *Jamaica Plain.* |
| Yarashefsky, Mark Henry | *Woonsocket, R. I* |

**Special Students.**

| | |
|---|---|
| Harding, Walter Allen | *Skowhegan, Me.* |
| Park, Osman Franklin | *Roslindale.* |

**Resident Graduates.**

| | |
|---|---|
| Hughes, Laura A. C., M. D. | *Boston.* |
| Patch, Annie S. K., M. D. | *Boston.* |
| Patterson, William F., M. D. | *East Somerville* |

# Summary.

| | | |
|---|---|---|
| **Corps of Instruction:** | | |
| Emeritus | | 2 |
| Professors | 36 | |
| Assistant Professors | 4 | |
| Instructors | 21 | |
| Lecturers | 9 | |
| Assistants | 15 | |
| Total engaged in work of instruction | 85 | |
| **Students.** | | |
| **College of Letters:** | | |
| Graduate | 6 | |
| Senior | 35 | |
| Junior | 53 | |
| Sophomore | 63 | |
| Freshman | 76 | |
| Special | 18 | |
| | — | 251 |
| **Divinity School:** | | |
| Senior | 14 | |
| Middle | 9 | |
| Junior | 4 | |
| Sub-junior | 4 | |
| Special | 4 | |
| | — | 35 |
| **Medical School:** | | |
| Senior | 54 | |
| Middle | 65 | |
| Freshman | 56 | |
| Special | 2 | |
| Graduates | 3 | |
| | — | 180 |
| Bromfield-Pearson School | | 6 |
| Total Number of Students | | 472 |

# THE COLLEGE OF LETTERS

# Faculty of the College of Letters.

ELMER H. CAPEN, D. D., PRESIDENT.
*Professor of Moral Philosophy and Political Economy.*
JOHN P. MARSHALL, A. M., DEAN.
*Pearson Professor of Geology and Mineralogy.*
JEROME SCHNEIDER, PH. D.
*Professor of the Greek Language and Literature.*
HEMAN A. DEARBORN, A. M.
*Professor of the Latin Language and Literature.*
WILLIAM R. SHIPMAN, D. D.
*Professor of Rhetoric, Logic, and Metaphysics.*
BENJAMIN G. BROWN, A. M.
*Walker Professor of Mathematics.*
CHARLES D. BRAY, C. E., A. M.
*Professor of Civil and Mechanical Engineering.*
CHARLES E. FAY, A. M.
*Wade Professor of Modern Languages.*
AMOS E. DOLBEAR, M. E., PH. D.
*Professor of Physics and Astronomy.*
WILLIAM L. HOOPER, A. M.
*Professor of Electrical Engineering.*
DAVID L. MAULSBY, A. M.
*Professor of English Literature and Oratory.*
J. STERLING KINGSLEY, S. D.
*Professor of Biology.*
GARDNER C. ANTHONY, A. M.
*Professor of Technical Drawing.*
ARTHUR MICHAEL, A. M., PH. D.
*Professor of Chemistry.*
LEO R. LEWIS, A. M.
*Professor of the History and Theory of Music.*
FRANK W. DURKEE, A. M.
*Assistant Professor of Chemistry.*
CHARLES ST. CLAIR WADE, A. M.
*Assistant Professor of Greek.*
FRANK E. SANBORN, S. B.
*Instructor in Mechanical Engineering.*
EDWIN A. START, A. M.
*Instructor in History.*

FRANK T. DANIELS, A. M. B., SECRETARY.
*Instructor in Civil Engineering.*
THOMAS WHITTEMORE, A. B.
*Instructor in English.*
JOHN E. BUCHER, A. C., PH. D.
*Instructor in Organic Chemistry.*
HARRY GRAY CHASE, B. E. E.
*Instructor in Electrical Engineering.*
FRANK G. WREN, A. B.
*Walker Special Instructor in Mathematics.*
CHARLES C. STROUD, A. B.
*Instructor in Physical Training.*
SAMUEL C. EARLE, A. M.
*Instructor in French, and Assistant in English Literature.*
ROBERT N. HARTMAN, A. B., PH. D.
*Instructor in Quantitative Analysis.*

## STANDING COMMITTEES OF THE FACULTY.

ADMISSIONS: The examiners and the Secretary of the Faculty.

PROMOTIONS: Professor Shipman, *Chairman;* Professors Hooper, Brown, Fay, and Assistant Professor Durkee

SCHOLARSHIPS AND AIDS: President Capen, *Chairman;* Professors Shipman and Dearborn.

PROGRAM: Mr. Start, *Chairman;* Professors Hooper, Dearborn, Brown, and Lewis.

CATALOGUE: Mr. Start, *Chairman;* Professors Hooper and Maulsby.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Knight (from the Divinity School), *Chairman;* Assistant Professor Durkee, and Mr. Daniels.

GLEE CLUB: Professor Lewis, *Chairman;* Professor Knight (from the Divinity School), and Mr. Daniels.

FRESHMAN PLANS OF STUDY: Professor Dearborn, *Chairman;* Professors Shipman, Brown, Lewis, and Assistant Professor Wade.

DEPARTMENT OF ENGINEERING: Professor Brown, *Chairman* President Capen, Professors Hooper and Bray, and Assistant Professor Durkee.

BOOKS AND SUPPLIES: Professor Lewis, *Chairman;* Assistant Professor Durkee, and Mr. Wren.

# Requirements for Admission.*

## SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for the several courses will be found in the schedule of examination groups on pages 45, 46, and 47.

**Latin.**

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. CÆSAR. — Gallic War, Books I–IV.

3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. VIRGIL. — Æneid, Books I–VI.

5. OVID. — Metamorphoses, 2,500 lines.

6. LATIN COMPOSITION. — Collar's Latin Composition, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

**Greek.**

7. GREEK GRAMMAR. — Hadley-Allen's or Goodwin's Greek Grammar, including Prosody.

8. XENOPHON. — Anabasis, four books.

9. HOMER. — Iliad, three books.

10. GREEK COMPOSITION. — The translation into Greek of a connected passage of English prose. Woodruff's Greek Composition is recommended as a drill-book.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

**German.**

11. ELEMENTARY GERMAN.

The Elementary Examination will be adapted to the proficiency of those who have studied German in a systematic course of five periods

* See note on page 48.

a week for *one* year. It will consist of two parts (which, however, cannot be taken separately) :— German.

(*a*) The translation at sight of a passage of easy prose containing no rare words.

The passages set for translation will be suited to candidates who have read not less than one hundred and fifty duodecimo pages of simple German, chiefly narrative prose ; this amount includes sight reading done in class. — It is important that all translation be done into clear and idiomatic English.

(*b*) The translation into German of simple English sentences, to test the candidate's familiarity with elementary grammar.

Elementary grammar is understood to include the conjugation of the weak and the more usual strong verbs ; the declension of articles, adjectives, pronouns, and such nouns as are readily classified; the commoner prepositions; the simpler uses of modal auxiliaries; the elements of syntax and word-order. — Proficiency may also be tested by direct questioning.

Practice in pronunciation by reading aloud as much as possible from the texts used in the class is recommended ; also the writing of German from dictation.

12. INTERMEDIATE GERMAN.

The Intermediate Examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately):—

(*a*) The translation at sight of ordinary German.

The remarks under 13(*a*) apply, merely substituting "*two hundred*" for "*six hundred*" in that program.

(*b*) The translation into German of a passage of simple English prose.

A less extensive knowledge of syntax than for 13(*b*) will be presupposed in the selection of the matter for translation.

13. ADVANCED GERMAN.

The Advanced Examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately):—

(*a*) The translation at sight of standard German.

In preparation for this examination candidates will be expected to have read, in addition to the amount specified under "Elementary (*a*)," at least six hundred duodecimo pages of classical and contemporary prose and verse, to be selected from such works as the following: Riehl, *Kulturgeschichtliche Novellen;* Freytag, *Bilder aus der*

*deutschen Vergangenheit*, especially *Aus dem Mittelalter* and *Aus dem Jahrhundert des grossen Krieges;* Kohlrausch, *Das Jahr* 1813; Schiller, *Der dreissigjährige Krieg, Wilhelm Tell, Maria Stuart, Die Jungfrau von Orleans;* Goethe, *Hermann und Dorothea, Egmont, Iphigenie;* Lessing, *Minna von Barnhelm.* At least one half of the amount read should be nineteenth century prose.

(*b*) The translation into German of a passage of easy English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence, the elements of word-formation, and the principal uses of prepositions and conjunctions; the essentials of syntax, especially the uses of modal auxiliaries and the subjunctive and infinitive modes. Proficiency may also be tested by direct questioning.

It is recommended that the candidate acquire the ability to follow a recitation conducted in German and to answer in that language questions asked by the instructor.

**French.** 14. ELEMENTARY FRENCH.

The Elementary Examination will be adapted to the proficiency of those who have studied French in a systematic course of five periods a week for *one* year. It will consist of two parts (which, however, cannot be taken separately): —

(*a*) The translation at sight of easy prose.

The passages set for translation will be suited to candidates who have read not less than two hundred duodecimo pages from the works of at least three different authors; this amount includes sight reading done in class. Not more than half the reading should be from works of fiction. It is important that all translation be done into clear and idiomatic English.

(*b*) The translation into French of English sentences, or a short connected passage, to test the candidate's familiarity with elementary grammar.

Elementary grammar is understood to include the conjugation of regular and the more usual irregular verbs, such as *aller, tenir, pouvoir, savoir, voir, vouloir, dire, faire,* and those belonging to the classes represented by *dormir, ouvrir, connaître, conduire, craindre;* the forms and positions of the personal pronouns; the uses of other pronouns and of possessive, demonstrative, and interrogative adjectives; the inflection of nouns and adjectives for gender and number, except rare cases; the commoner uses of the article; and the partitive constructions. — Proficiency may also be tested by direct questioning.

Pronunciation should be carefully taught, and the pupil should be accustomed to hear and understand the spoken language. The writing of French from dictation is also recommended.

15. INTERMEDIATE FRENCH. **French.**

The Intermediate Examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary French.

The remarks under 16 (*a*) apply, merely substituting "*three hundred*" for "*eight hundred.*"

(*b*) The translation into French of a passage of easy English.

A less extended knowledge of syntax than for 16 (*b*) will be presupposed in the selection of matter for translation.

16. ADVANCED FRENCH.

The Advanced Examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of standard French.

The passages set for translation will be suited to candidates who have read, in addition to the amount specified under "Elementary (*a*)," not less than eight hundred duodecimo pages of classical and contemporary prose and verse from the writings of at least five standard authors.

(*b*) The translation into French of a passage of English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence and a familiarity with the essentials of French syntax, especially the uses of modes and tenses, and also with the commoner idiomatic phrases. — Proficiency may also be tested by direct questioning.

Careful attention should be paid to pronunciation and to the use of spoken French, that the candidate may at least acquire the ability to follow a recitation conducted in the language and to answer questions asked by the instructor.

17. ARITHMETIC, including the Metric System. **Mathematics.**

18. ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

19. PLANE GEOMETRY.

20. SOLID GEOMETRY.

21. (*a*) ANCIENT HISTORY (Greece and Rome), or **History.**
(*b*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or
(*c*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The following text-books are recommended and will indicate the amount of preparation required: (*a*) and (*b*), Sheldon's Outlines of

**History.** General History; (*a*), for Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools, Johnston's History of the United States for Schools. The use of such manuals as Wilder's English History (Laboratory method) and Bacheler's American History (Library method) is helpful.

**English.** 22. ENGLISH.

*Note.*— No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.*— A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be : —

1897.— Shakespeare's As You Like It; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

1898.— Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

1899. — Dryden's Palamon and Arcite; Pope's Iliad, Books I, VI, XXII, and XXIV; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

2. *Study and Practice.*— This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clear-

ness and accuracy. The books set for this part of the examination will be: — English.

1897. — Shakespeare's The Merchant of Venice; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson.

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

1899. — Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

23. PHYSICS. — The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department. Sciences.

24. CHEMISTRY. — Remsen's Briefer Course or its equivalent.

25. NATURAL HISTORY. — Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

26. FREEHAND DRAWING. — Outline drawing from simple casts, geometric models, and groups of models.

## EXAMINATION GROUPS.

Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups: — For courses leading to degree of A. B.

### Group I.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

**For courses leading to degree of A. B.**

Group II.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16.
FRENCH, 14. } or { GERMAN, 11.

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

**For courses leading to degree of Ph. B.**

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

Group III.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 12. } or { FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11.

Group IV.

MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16. } or { GERMAN, 11 and 12. / FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11. }

PHYSICS, 23.
CHEMISTRY, 24.
NATURAL HISTORY, 25. } To be accepted, these subjects must represent an aggregate of at least three years of study, with an average of four periods a week.

[LATIN, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, GERMAN, 11 and 12, or FRENCH, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group

III in modern languages, and of elementary work in three scientific subjects.

Group V.

For couses leading to degree of S. B.

MATHEMATICS, HISTORY, and ENGLISH, as in I.
LATIN, 1, 2, and in 4, four books of the Æneid; or
GERMAN, 11 and 12; or
FRENCH, 14 and 15.
SCIENCE: One year's work, with a weekly average of at least three periods of class work, in one of the following: Chemistry, Physics, Physiology, Botany, Zoölogy, Geology, Drawing.

This examination group admits to the courses leading to the degree of Bachelor of Science: the General Course in Science, the Special Courses in Biology and Chemistry, and the Medical Preparatory Course. These courses are intended primarily for graduates of English high schools who have a special object before them lying along the lines laid out for these courses.

Candidates for the courses leading to the degree of Bachelor of Science in Engineering will be required to take the subjects comprised in

For Candidates for Engineering Courses.

Group VI.

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or French, 14.
ENGLISH, 22.
DRAWING, 26.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be candidates for admission to the Freshman class one year later may present themselves for a preliminary examination, if cer-

tified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Registrar of the College) must specify the subjects that have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course. Certificates should be in the hands of the Registrar at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate. Every school sending certificates is required to file with the Secretary of the Faculty a statement of its course of instruction and teaching force. Certificates from schools not complying with this requirement will not be accepted.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

[NOTE.— A special circular will soon be prepared setting forth in detail a new arrangement of requirements for admission. This circular can be obtained by application to the Librarian of the College.]

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts, or for that of Bachelor of Philosophy, or for that of Bachelor of Science, according to the examination group upon which they are admitted to the college. In any case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation, while the courses leading to the degree of Bachelor of Science consist mainly of prescribed work on special lines. Those who have fulfilled the requirements for the degree of Bachelor of Philosophy may obtain the degree of Bachelor of Arts on the satisfactory completion of six term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the courses students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accom-

plished by the student in regular standing counts toward the attainment of the degree. The period within which the degree may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS.

### For A. B. and Ph. B.

[NOTE. — Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of program hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows: —

| | Term Hours. |
|---|---|
| Languages (Latin, Greek, French, German; each student to take *three*) . . . . . | 18 |
| English (Rhetoric, Composition, Themes, Oratory) | 12 |
| Mathematics . . . . . | 6 |
| Science (Physics, Chemistry, Biology; each student to take *one*) . . . . . | 6 |
| Mental and Moral Sciences (Philosophy, History, Political Science; each student to take *one full or two half* subjects) . . . . . | 6 |
| Physical Training . . . . . | 2 |
| A total of . . . . . | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the

prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student will make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B as an average for his entire work.

**Summary.**

| | | | |
|---|---|---|---|
| Prescribed work | 50 | term | hours. |
| Major department | 18 | ,, | ,, |
| Collateral subjects | 18 | ,, | ,, |
| Free electives | 42 | ,, | ,, |
| | 128 | ,, | ,, |

**For S. B.**

The requirement for the degree of Bachelor of Science is the satisfactory completion of one hundred and twenty-eight term hours, according to the programs for the General Science Course, Special Courses in Biology and Chemistry, and Medical Preparatory Course, on pages 89 to 92. The highly specialized character of these courses leaves only a small allowance

of time outside the prescribed subjects, but there is a limited amount of time at the disposal of the student for free election.

The requirements for the degree of Bachelor of Science in Engineering are given in connection with the detailed statement of the Engineering Courses on page 93 and following.

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments: —

| | |
|---|---|
| ENGLISH. | HISTORY. |
| ENGLISH LITERATURE. | POLITICAL SCIENCE. |
| GERMAN. | MATHEMATICS. |
| FRENCH. | PHYSICS. |
| LATIN. | CHEMISTRY. |
| GREEK. | BIOLOGY. |
| PHILOSOPHY. | ENGINEERING. |

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given during the current year. In many cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts follows the subjoined statements of the several departments. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

PROFESSOR SHIPMAN.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all. The brief essays are subject to criticism both in class and with the individual writers. The more formal study of Rhetoric begins with the second year. If a text-book is used as the basis of instruction, it is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition. Major students in English will be expected to make English Literature their principal collateral.

SUBJECTS.

1. — Composition. Lectures, discussion of papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

2. — The Theory and Practice of Composition. Lectures and readings; criticism and discussion of themes. *Monday, Wednesday, and Friday at* 10.45. MR. WHITTEMORE.

3. — The aim in English 3 is to emphasize the fundamental function of expository writing, and to aid the student to gain clearness, ease, and rapidness of expression. The written work consists of five themes each week. *Monday and Friday at* 9.45 (*first half-year*). MR. WHITTEMORE.

4. — Three kinds of writing, narration, description, and exposition, are discussed, and specimens from eminent authors are studied. The written work consists of two themes each week. *Tuesday and Thursday at* 8.45 (*first half-year*). MR. WHITTEMORE.

5. — Argumentative Composition, a study of its requirements as observed by successful writers, with constant practice by the student. The written work consists of two themes or their equivalent each week. *Two hours a week* (*first half-year*). PROFESSOR SHIPMAN.

Subjects 1 and 2, with 3, 4, or 5, and Oratory 1, will constitute the prescribed work in English.

6. — Essays, with special attention to the construction of extended

discourse. Weekly papers, plans, free discussion, individual criticism. *Three hours a week (second half-year).* PROFESSOR SHIPMAN.

7. — Forensics. This subject differs from 5 in directing attention chiefly to the requirements of debate, including the preparation of briefs. The work is wholly written. *Three hours a week (first half-year).* PROFESSOR SHIPMAN.

8. — Rhetoric (advanced course). The Principles of Style; the Elements of Criticism. Elective for students who have completed with credit the prescribed work in English, and for such others as may be approved by the instructor. *Monday, Wednesday, and Friday at* 11.45 *(first half-year).* PROFESSOR SHIPMAN.

9. — Composition (advanced course). Elective for students who have taken Subject 8 in addition to the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 *(second half-year).* PROFESSOR SHIPMAN.

## ORATORY.

PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out and remedies suggested. The work in the required subject aims at securing reading that shall be intelligent, natural, and forcible. In this subject the principles that underlie all successful public speaking are indicated, and, so far as possible, these principles are applied in practice. In the elective courses, opportunity is offered for specializing, during two successive years, in either dramatic reading, or in senatorial oratory. In connection with oratory as a means of persuasion, it is urged that students take related subjects in English composition. English 5 is suggested as furnishing valuable aid in connection with Oratory 3, and the practice in formal oral debate has been assigned to the second half-year as properly following the thorough drill in forensic composition afforded by English 7.

### SUBJECTS.

1. — The Principles of Oratory Exemplified in Practice. Class

exercises in vocalization and gesture. (*a*) *Tuesday at* 8.45. (*b*) *Wednesday at* 2.

2.— Study of Selections from Shakespeare and Browning. Individual presentation of standard poetry and prose. *Tuesday at* 2.

3.— Study of Selections from the Great Orators. Individual presentation of forensics. *Thursday at* 2.

4.— Dramatic Rendering. Study and delivery of scenes from the standard drama. The possible public presentation of a play. *One hour for the year. Hour to be arranged.*

5.— Formal Oral Debate. The practice of debate, under the usual parliamentary forms of a deliberative body. The possible presentation of a public debate. *Two hours for the second half-year. Hours to be arranged.*

## ENGLISH LITERATURE.

PROFESSOR MAULSBY.

The study of our literature offers opportunity for acquaintance with the work of selected writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published criticism that clusters about the great names are not neglected, although given a subordinate place. The method at first pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. The library contains multiple copies of many of the authors read.

It is believed that students of literature will best begin with the first two subjects, taking them together, or in successive years. In the subjects numbered from 3 to 7, the study of linguistic forms is not necessary, which must be required in greater or less degree in the subjects numbered from 8 to 11. But in all subjects the thought-content is regarded as the thing of prime importance. The seminary method is employed in the advanced classes. Students under-

taking a line of research are expected to have gained the ability to pursue independent investigation among the books of neighboring libraries. Appropriate collateral subjects are English, Philosophy, French, German, and History, the correlation of studies to be determined in each case by the aims of the student.

Subjects in brackets will be given in 1897–98.

SUBJECTS.

1. — General View of the Whole Field. Lectures, examinations, and required reading. *Monday at* 10.45.

MR. EARLE, MR. WADE, MR. WHITTEMORE, PROFESSOR MAULSBY.

2. — American Literature. Lectures, required reading, special topics, essays. *Monday, Wednesday, and Friday at* 3.

PROFESSOR MAULSBY.

3. — The English Romantic Movement. Lectures, reading, individual treatment of authors not studied in the class. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.

4. — Poets of the Victorian Era. Lectures, reading, individual treatment of authors not studied in the class. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.

[This subject will be given in 1898–99.]

[5. — Prose of the Nineteenth Century. Lectures, reading, brief critical essays. *Three hours for the first half-year. Hours to be arranged.* MR. WHITTEMORE.]

6. — Browning. Poems, collateral reading, lectures, brief critical essays. *Three hours for the first half-year. Hours to be arranged.*

MR. WHITTEMORE.

7. — Poetry and Drama of the Restoration. Lectures, parallel reading, essays. *Monday, Wednesday, and Friday at* 3 (*second half-year*). MR. WADE.

8. — Shakespeare. Reading of twenty-five plays, lectures, examinations, brief critical essays. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

*Hours to be arranged* (*second half-year*). MR. WHITTEMORE.

[9. — Chaucer. Study of forms and pronunciation, reading of selections from the Canterbury Tales and the minor poems, essays. *Monday, Wednesday, and Friday at* 9.45 (*second half-year.*)

PROFESSOR MAULSBY.]

10. — Anglo-Saxon. Study of the grammar, and the reading of prose selections, during the first half-year. The subject may be continued through the second half-year, when the whole of Beowulf may be read. *Tuesday, Thursday, and Saturday at* 10.45.

MR. EARLE.

11. — Advanced Anglo-Saxon. Chronological development of Anglo-Saxon prose and poetry. *One hour for the year. Wednesday at* 10.45. MR. EARLE.

12. — English Versification. Study of poetic forms and practice in poetic composition. *One hour for the year. Hour to be arranged.*

PROFESSOR MAULSBY.

[Given on the application of four qualified students.]

13. — History of English Criticism. From Sir Philip Sidney to Walter Pater. *One hour for the year. Hour to be arranged.*

PROFESSOR MAULSBY.

[This subject will be given in 1898-99.]

14. — Development of a Literary Form, as (*a*) the drama, (*b*) the novel, (*c*) the lyric.

[(*a*) Development of the English Drama. Special emphasis will be placed upon the Elizabethan dramatists.]

(*b*) Development of the English Novel. *Friday at* 10.45.

PROFESSOR MAULSBY.

15. — Special Research. Any student sufficiently advanced may pursue a special line of inquiry in the investigation of some restricted field of British or American literature, under the direction of the department.

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the

intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

SUBJECTS.

1. — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises; Bernhardt's Im Zwielicht, II; Riehl, Burg Neideck; Buchheim's Balladen und Romanzen. *Tuesday, Thursday, Saturday at* 9.45. PROFESSOR FAY.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate German. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax. Reading of modern prose and poetry, such as Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Scheffel, Der Trompeter von Säkkingen. *Tuesday, Thursday, and Saturday at* 8.45. MR. O. F. LEWIS.

German 2, when taken by entering students, presupposes two years' study of the language in the preparatory school. It is possible for a student who has done with distinction the work of German 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter German 3.

3. — First half-year. Course for the rapid reading of modern prose. Scheffel, Ekkehard; Freytag. Second half-year. Course introductory to the classic authors. Lessing, Minna von Barnhelm;

Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR FAY.

For entering students German 3 presupposes three years of preparatory study. It may be taken as a half-subject by more advanced students.

4. — Schiller and Goethe. Lyrics; Egmont; Maria Stuart; Wallenstein; with collateral reading in historical prose. *Tuesday, Thursday, and Saturday at* 11.45. MR. O. F. LEWIS.

German 4 is open to entering students who have had four years of preparatory study, or who, having passed with distinction the entrance examination in Advanced German, also pass with credit a special examination in advanced grammar and sight translation.

5. — Advanced Course in Lessing and Goethe. Nathan der Weise, Emilia Galotti, Laocoön; Tasso, Iphigenie, Faust; with collateral reading. *Monday, Wednesday, and Friday at* 4. PROFESSOR FAY.

[6. — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. A thesis is required of candidates for honors. PROFESSOR FAY.]

7. — German Composition. First half-year: Stein's Exercises, original themes, dictation, conversation. Second half-year: White's Exercises, with more advanced work in original themes, oral and written translation into German, and conversation. This course is offered to students who have satisfactorily completed German 2 or its equivalent. *Monday and Friday at* 4. MR. O. F. LEWIS.

## FRENCH.

PROFESSOR FAY AND PROFESSOR LEWIS.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

1. — Elementary French. The essentials of grammar, with composition; Grandgent's Short Grammar, with College Exercises; a French Reader; reading of short works of modern authors in prose and verse. *Tuesday, Thursday, Saturday, at* 9.45.
PROFESSOR LEWIS AND MR. EARLE.

French 1 is the equivalent of the entrance requirement in Elemen-

tary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax; exercises in composition ; short weekly themes; reading of modern fiction and drama, such as Merimée's Colomba and Sandeau's Mademoiselle de la Seiglière. *Tuesday, Thursday, Saturday, at* 8.45.

PROFESSOR LEWIS AND MR. EARLE.

French 2, when taken by entering students, presupposes two years' study of the language in a preparatory school. It is possible for a student who has done with distinction the work of French 1 in college, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

3. — First half-year. Course for the rapid reading of modern authors: Thiers, Taine, de Vigny. Second half-year. Introductory work in Seventeenth Century Classics: Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Review of grammatical principles in Ploetz's Nouvelle Grammaire Française, and occasional brief themes. *Monday, Wednesday, and Friday at* 8.45. PROFESSOR LEWIS AND MR. EARLE.

For entering students, French 3 presupposes three years of preparatory study. It may be taken as a half-subject by more advanced students.

4. — First half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII^e^ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. Second half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. *Monday, Wednesday, Friday, at* 8.45. PROFESSOR FAY.

French 4 is open to entering students who have had four years of preparatory study of the language, or who, having passed with distinction the entrance examination in Advanced French, also pass with credit a special examination in advanced grammar, composition, and sight translation. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

5. — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Chateaubriand, Hugo, Lamartine, de Musset, Balzac, Sainte-Beuve, and selections from contemporary authors; History of French Literature presented by lectures and collateral readings. *Monday, Wednesday, and Friday at* 3.

PROFESSOR LEWIS AND ASSISTANT PROFESSOR WADE.

6.— Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Historical Grammar and Old French : Brunot, Grammaire Historique de la Langue Française, Bartsch, Chrestomathie de l'Ancien Français. A thesis is required of candidates for honors. *Monday, Wednesday, and Friday at* 11.45.
PROFESSOR FAY.

## ITALIAN.

PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

SUBJECT.

1.— Grandgent's Grammar and Composition; De Amicis, Cuore ; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

PROFESSOR DEARBORN.

The work in this department is arranged and conducted with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation of Latin, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, acquired partly by reading Latin authors, partly by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early part of the work the forms and construction of the language are carefully studied. Translation, both oral and

written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The advanced work is especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays, read and criticised before the class.

SUBJECTS.

1.— Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those choosing Latin as a prescribed language.

2.— Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR DEARBORN.

3.— Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR DEARBORN.

4.— Cicero; Terence; Catullus; Quintilian. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR DEARBORN.

5.— Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when elected should be taken simultaneously with it in the Freshman year.

6.— Cicero (Brutus and Second Philippic); Plautus or Terence; Lucretius (Books I–III); Tacitus (Dialogue or Annals); Comparative Grammar of Greek and Latin (King and Cookson or Henry); History of the Latin Language and Literature. *Three hours a week.* PROFESSOR DEARBORN.

This subject is for graduate students.

## GREEK.

PROFESSOR SCHNEIDER AND ASSISTANT PROFESSOR WADE.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, and especial effort is made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

### SUBJECTS.

1. — Elementary. Goodwin's Grammar; Graves and Hawes's First Book; Xenophon (Anabasis); Homer (Iliad I–III); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45. ASSISTANT PROFESSOR WADE.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

2. — Xenophon (Memorabilia or Cyropædia); Herodotus (Books VI and VII); Homer (Odyssey); Sophocles (Œdipus Rex); Greek Composition. *Monday, Wednesday, and Friday at* 2.
ASSISTANT PROFESSOR WADE.

Greek 2 is the course for students who have passed the entrance requirements in Greek. Particular attention is given to the syntax

of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

3. — Lysias (Selected orations); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. ASSISTANT PROFESSOR WADE.

[4. — Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. ASSISTANT PROFESSOR WADE.]

Greek 3 and 4 are offered in alternate years and are open to those who have passed in Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and modes and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

5. — Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Hours to be arranged with the instructor.* PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

6. — Plato (Symposium); Aristotle (Ethics, Books I–IV, or Politics); reading at sight in Herodotus and Lucian. *Hours to be arranged with the instructor.* PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

7. — Topics in Greek History: reading at sight; Greek Composition. *Half-subject. Hours to be arranged with the instructor.* ASSISTANT PROFESSOR WADE.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

[8. — Demosthenes (Private, Hellenic, Olynthiac, and Philippic

Orations); Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.]

9. — Study of the Sources of Greek History; critical reading of Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.

[10. — Plato (Gorgias, Phaedo, Republic I–V); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 9 being the subject for 1896–97. These subjects are intended for those wishing to pursue graduate work in the department. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek history, and in 10 on the life, works, style, and philosophy of Plato.

## PHILOSOPHY.

PROFESSOR SHIPMAN.

Together with historical and critical work in Philosophy, this department includes Logic, Psychology, and Ethics. Students choosing it as their major department will be expected to take at least three term hours in each of these subjects, and to make up three years of continuous work. Half subjects are offered for the most part, and the preparatory subjects are so far complete that any of them may be taken by students not intending to pursue special studies in the department.

In Psychology discussion follows chiefly the lines of modern investigation. A text-book affords the basis of study, and is supplemented by such means as are available without laboratories. In a second term the subject may be continued by extensive reading, including periodical literature, with full discussion by members of the class, and by the preparation of theses. The first subject in Logic includes an elementary consideration of inductive reasoning. The advanced course may be varied according to the conditions of each class.

The work in Ethics embraces ethical theory and practice, and ethical questions are also discussed in their psychological and metaphysical bearings. Lectures are given, and an elementary text-book forms the basis of the discussion.

SUBJECTS.

1. — The History of Philosophy. First half-year: the pre-Socratic Greeks; Socrates, Plato, and Aristotle; the Stoics and Epicureans. Second half-year: the Period of Enlightenment from Locke to the death of Lessing (1689–1781); German Philosophy from Kant to Hegel (1781–1820), with special attention to Kant and Schopenhauer. Lectures, theses, and wide reading. *Monday, Wednesday, and Friday at* 9.45. MR. CUSHMAN.

This course is an introduction to Philosophy and is designed for beginners. It is extremely advisable that the student should understand the literature of Philosophy before taking any other course in constructive or critical Philosophy.

2. — Psychology. Discussion, following chiefly Sully's Outlines. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

3. — Psychology (advanced). *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

4. — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

5. — Logic (advanced course), especially inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 5 is open only to such students as have, with distinction, completed 4. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

6. — Ethics. Elementary principles; discussion of ethical theories; practical questions. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). MR. CUSHMAN.

7. — Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR TOUSEY.

Philosophy 7 follows 6 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 6.

8. — The Philosophy of Religion. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR KNIGHT.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times. Lectures and criticisms in the class-room supplement the students' personal investigations.

9. — Metaphysics; the fundamental problems of Philosophy considered constructively; problems of knowledge, nature, self, and self-consciousness, theism, teleology, freedom, and causation; realism and idealism. Lectures and critical discussion in the class of the text of Deussen's Elements of Metaphysics and Carus's Primer of Metaphysics. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). MR. CUSHMAN.

This subject has as its purpose to induce the student to reflect upon the final problems of life, and to form independent and rational conclusions.

[10. — Descartes, Leibnitz, and Spinoza. Critical and expository study of the authors, lectures, readings of the text, theses. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. CUSHMAN.]

[11. — Kant and Schopenhauer; review of the Romance Period. Critical study of the authors, lectures, readings, and theses. Open to students who have taken a half-year, at least, in Philosophy 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. CUSHMAN.]

[12. — English Philosophy from Hobbes to Hume. Method of work similar to 10 and 11. Open to students who have taken a half-year, at least, of Philosophy 7. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. CUSHMAN.]

Philosophy 10, 11, and 12 are given in successive years. Philosophy 10 will be given in 1897–98.

## HISTORY.

MR. START.

The subjects in this department are included under the heads of general European, English, and American history,

and special advanced studies. History 1 is the introductory subject by which the student is prepared for more specialized work. Under History 2 there are offered from time to time studies of important epochs in European history, or of single nations. History 3 is devoted to England, and 4, 5, and 6 to our own country. Opportunity is thus given during the undergraduate course to obtain a conspectus of those fields of history most important to the American student. The method of work is briefly explained in connection with the appended statement of subjects. In the work of the department the essential unity of history, and the consequent bearing of the experience of the past upon the problems of the present, are kept constantly in view. The chief aim is not the mere accumulation of facts, but an adequate comprehension of the meaning and method of historical science.

Major students will in most cases be required to choose their collateral subjects in the fields of Political Science or Philosophy, though variations may be made when it seems advisable. English Literature will be a natural collateral for those working along the lines of English history. Political Science 2 and 5 are essentially historical. A reading knowledge of French and German is always useful for the student of history, and is necessary for anything approaching a thorough study of continental European history.

SUBJECTS.

1. — General European History. A study of the elementary principles of historical science and of the outlines of European history to 1815. Two lectures weekly, class discussions, collateral reading, and practice work. *Tuesday, Thursday, and, at the pleasure of the instructor, Saturday at* 10.45. MR. START.

History 1 must precede all other subjects in History. It will not be accepted for an advanced degree. It is open to any student who has passed the requirements in History for admission to the College. A considerable amount of time will be given to the Middle Ages and the formative influences from which modern Europe has developed.

[2. — Studies of Periods in European History.

(*a*) Renaissance and Reformation.

(*b*) The Eighteenth and Nineteenth Centuries, with especial reference to the French Revolution and its results.]

[3. — English History.

(*a*) Social and Literary History of England. A study of the development of English society and of the historical aspects of English literature.

(*b*) Constitutional History of England.]

4. — American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, collateral readings, and topical reports. Open to students who have taken History 1. *Hours to be arranged (second half-year).* MR. START.

5. — Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources, and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 11.45. MR. START.

History 4 and 5 form a continuous course in which similar methods are used. The collateral reading and topical work involve thorough study of the principal literature of American history and of the leading historical documents. While primarily for undergraduates, these subjects may be taken by graduates, and may count toward an advanced degree, but in such a case it is expected that the subject will be passed with high credit, and that some additional special work will have been done.

6. — Seminary in American History. Research work with the sources. *Full subject: meetings weekly or fortnightly, at the pleasure of the instructor.* MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and obtaining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library. Only students who have done with credit at least nine term hours of work, including History 4, in the department are eligible.

7. — Seminary for the study of the Philosophy and Methods of History. *Weekly meetings to be arranged with the instructor.* MR. START.

This seminary will be opened whenever two or more properly qualified candidates present themselves. It is intended primarily for graduates, especially for those who intend to teach history, but

undergraduates of high standing, who have passed in not less than twelve term hours of work in the department, may be admitted by permission of the instructor. The members will work on independent but cooperative lines, and much attention will be given to methods of historical study and teaching. The hours of meeting will be so arranged that teachers of history in the schools may join the seminary.

8. — The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*).
PROFESSOR KNIGHT.

## POLITICAL SCIENCE.

PRESIDENT CAPEN.

In this department are included subjects relating to Economics, Government, and Law.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics. Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the

time allows, a treatment of the subject that is at once broad and practical is sought.

Political theory and the practice of government are treated in 5 and 6.

SUBJECTS.

1. — Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the history of economics, theories of production, consumption, distribution, etc.; problems of profits, wages, and labor. *Tuesday, Thursday, and Saturday at* 8.45.

PRESIDENT CAPEN.

2. — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PRESIDENT CAPEN.

3. — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).

PRESIDENT CAPEN.

4. — Research work in problems of Government or Economics for students electing Political Science as their major department, who have passed in 1, 2, and 3. PRESIDENT CAPEN.

5. — Political Science and Comparative Constitutional Law. A study of the origin and nature of the State, and the development of typical constitutions. Lectures, text-book work, collateral reading, and discussions. *Hours to be arranged.*

MR. START.

[6. — Constitutional Law and Municipal Institutions of the United States. Lectures, collateral reading, and discussions. MR. START.]

Subjects 5 and 6 will not be given in the same year. Due announcement will be made which, if either, will be given next year. In the former the work is based on Wilson's The State, and Burgess's Political Science and Comparative Constitutional Law; in the latter, on Bryce's American Commonwealth and some work on the Constitution. Both subjects presuppose some study of history. Political Science 5 must be preceded by History 1, and 6 must also be preceded or accompanied by History 5.

## MATHEMATICS.

PROFESSOR BROWN.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included

in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructors is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

SUBJECTS.

1.— Bowser's College Algebra; Solid Geometry; Bowser's Plane Trigonometry. Applications of Plane Trigonometry. *Monday Wednesday, and Friday at* 8.45 (Division I). Mr. JORDAN. *At* 9.45 (Division II). PROFESSOR BROWN.

2.— Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*).
PROFESSOR BROWN.

3.— Bowser's Analytic Geometry. Open to students who have taken 1. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*).
PROFESSOR BROWN or MR. WREN.

[See Engineering Courses.]

4.— Spherical Trigonometry; Projections of Triangles; use of Richards's Manual with the sphere. Open to students who have had 1. (*First half-year.*) PROFESSOR BROWN.

5.— Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*).
PROFESSOR BROWN.

6. — Differential and Integral Calculus, Osborne's. *Three hours a week (second half-year).* MR. WREN.

[See Engineering Courses.]

7. — Differential and Integral Calculus continued. *Two hours a week (first half-year).* MR. WREN.

[See Engineering Courses.]

8. — Differential and Integral Calculus (advanced course). *Two hours a week (second half-year).* PROFESSOR BROWN or MR. WREN.

9. — Weld's Theory of Determinants; Hanus's Elements of Determinants. *Three hours a week (first half-year).* MR. WREN.

10. — Differential Equations. *Two hours a week (first half-year).* PROFESSOR BROWN.

[See Engineering Courses.]

11. — Method of Least Squares. Comstock and Merriman. *Two hours a week (second half-year).* PROFESSOR BROWN.

[*Drawing* 1 (DESCRIPTIVE GEOMETRY) *is also a distinctively mathematical subject. For further subjects essentially mathematical, see subjects* 1 *and* 4 *in the department of Drawing, and subjects* 1, 3, *and* 8 *in the department of Civil and Mechanical Engineering.*]

## PHYSICS.

PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consid-

eration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

SUBJECTS.

1. — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

3. — Electricity: Thompson's Elementary Lessons in Electricity and Magnetism. Lectures and recitations. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). MR. H. G. CHASE.

4. — Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week* (*second half-year*). MR. H. G. CHASE.

5. — Electricity: Theory of Measurements. *Three hours a week* (*first half-year*). Electrical Laboratory: Simple Measurements and Tests. *Two hours a week.* MR. H. G. CHASE.

6. — Relation of Physics to Sociology. Lectures. *Tuesday and Thursday at* 2 (*first half-year*). PROFESSOR DOLBEAR.

7. — Spencer's First Principles. *Tuesday and Thursday at* 2 (*second half-year*). PROFESSOR DOLBEAR.

## CHEMISTRY.

PROFESSOR MICHAEL AND ASSISTANT PROFESSOR DURKEE.

The work in the department begins with Chemistry 1, which is open for election by the students of the courses in Liberal Arts, and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, and the student will have an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examinations. An opportunity to continue the study of theoretical and inorganic chemistry is afforded by subjects 11 and 12. In connection with subject 11 problems in stoichiometry and chemical reactions will be considered, and the study of theoretical chemistry taken up. This subject is continued in 12, in connection with a course on advanced inorganic chemistry. Facility is given to those who wish to supplement the above course of lectures with laboratory practice by taking subject 14, when the student will undertake some of the more difficult inorganic experiments and preparations; thus obtaining greater experience in chemical experimentation. The last two subjects may be taken as graduate work.

The instruction in Qualitative Analysis extends through a year, and consists of two subjects (2 and 3) taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly a large number of mixtures and minerals. Subject 6 is intended to teach the use of the blowpipe in chemistry, together with the tests that are of special value in determinative mineralogy. Crystallography will be taken up in connection with this subject. Quantitative Analysis is mainly taught

by laboratory practice, in order that the student may attain that skill in manipulation which is necessary for this kind of work. In subject 4 the student is required to analyze the simpler salts and minerals, and in the advanced subject 5, the more complicated minerals, ores, commercial and food products, etc. The analysis of organic substances is included in subject 5. Gas analysis (subject 9) is taught by lectures and laboratory work, principally in the use of technical methods. Assaying (subject 7) is adapted to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such a thorough theoretical and practical knowledge as to prepare him for analytical work of any description. The course of lectures in Metallurgy (subject 8), with recitations, is intended to give the student a general idea of fuels, ore dressing, refractory building materials, and the more important technical methods of extracting iron, copper, and silver.

The study of Organic Chemistry begins with a course of lectures, illustrated by experiments, and recitations, which cover the general principles, methods, and description of the most important organic compounds. For those who wish to specialize in this science an opportunity is given by subject 13, in which by lectures the underlying theories of organic chemistry will be fully discussed and the relations between them and organic reactions explained. The laboratory practice in organic chemistry (subject 15) may be begun at the same time as subject 10 and continued with 13. It includes the methods for determining the physical properties and molecular weights of organic substances and the preparation of compounds. When taken in connection with subject 13, one or more researches of special importance will be repeated by the student. The subjects 12, 13, 14, 15, and 16 may be taken as graduate work.

Subjects 12, 13, 14, and 15 are especially designed to lead up to research work in chemistry, and students who have taken them, with subject 5, are prepared to enter on this line of advanced work. Ample facilities are offered for the successful

prosecution of investigations in inorganic and organic chemistry.

Two laboratory hours are equivalent to one term hour, except in the special course in Chemistry, for the degree of Bachelor of Science, in which three hours of work in the laboratory count as one term hour. The quantitative and organic laboratories are open from nine to five o'clock daily, Saturday afternoons excepted.

SUBJECTS.

1.— General Chemistry. Lectures, recitations, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

2.— Qualitative Analysis. Basic Analysis. *Lectures, laboratory work, and recitations on Tuesday and Thursday from 2 to 5; also on Saturday, 8.45 to 11.45, for students of the special course in chemistry (first half-year).* ASSISTANT PROFESSOR DURKEE.

3.— Qualitative Analysis. Acids; Analysis of Salts, Commercial and Natural Products. *Lectures, laboratory work, and recitations on Tuesday and Thursday from 2 to 5; also on Saturday, 8.45 to 11.45, for students of the special course in chemistry (second half-year).* ASSISTANT PROFESSOR DURKEE.

4.— Quantitative Analysis. Gravimetric and Volumetric Analysis; Analysis of Minerals. *Lectures and laboratory work. Three hours a week.* DR. HARTMAN.

5.— Quantitative Analysis (advanced course). Analysis of Minerals, Ores, Water, Food Products, Organic Analysis, etc. *Laboratory work. Three hours a week.* DR. HARTMAN.

6.— Crystallography and Determinative Mineralogy. Open to students who have taken 1, 2, and 3. *Lectures and laboratory work. Two hours a week (first half-year).* MR. LEIGHTON.

7.— Fire Assay. Open to students who have taken 1, 2, 3, and 4. *Two hours a week (second half-year).* MR. LEIGHTON.

8.— Metallurgy. Lectures and recitations. Open to students who have taken 1. *Three hours a week (second half-year).* ASSISTANT PROFESSOR DURKEE.

9.— Gas Analysis. Lectures and laboratory work. Open to students who have taken 1, 2, 3, and 4. *One hour a week.* DR. HARTMAN.

10.— Organic Chemistry. Lectures and recitations. Open to students who have taken 1. *Three hours a week (first half-year).* DR. BUCHER.

11.— Theoretical Chemistry. Lectures and recitations. Open to students who have taken 1. *Two hours a week (second half-year).*
DR. BUCHER.

12.—Theoretical and Inorganic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1 and 11. *Three hours a week (first half-year).* PROFESSOR MICHAEL.

13.—Organic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1 and 10. *Three hours a week.* PROFESSOR MICHAEL.

14.—Laboratory work in Inorganic Preparations. *Hours to be arranged by the instructors.* PROFESSOR MICHAEL and DR. BUCHER.

15. — Laboratory work in Organic Analysis; determination of physical constants and molecular weights; preparation of organic compounds. *Hours to be arranged by the instructors.*
PROFESSOR MICHAEL and DR. BUCHER.

16.— Original Investigations in Chemistry. *Hours to be arranged by the instructor.* PROFESSOR MICHAEL.

17.— Discussions on chemical subjects and recent investigations. *One hour a week.*

## BIOLOGY.

PROFESSOR KINGSLEY.

The work in Biology is differentiated in two lines: one for those desiring a general knowledge of the subject, and one for those who need more thorough work. The first line embraces Biology 1, and may, upon election, be followed by subjects 4, 5, 6, and 7. The other course begins with Biology 2 and 3 and is required of all major students as well as of those candidates for the degree of S. B. in the Biology, Medical Preparatory, and General Science courses. These are followed by subjects 5 to 9, subject 8 involving the preparation of a dissertation. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems.

The equipment of the department is good. There are three

well-lighted laboratories furnished with every requisite for good work, including microscopes, microtomes, reagents, etc., as well as abundant material for illustration and dissection. One of the laboratories is devoted to elementary biology, one to advanced undergraduate work, and one to graduate students. There is also a department library containing 826 volumes and 1,875 pamphlets, while the college library contains the proceedings of many learned societies, both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to library facilities unequalled in any other part of America.

SUBJECTS.

1. — General Biology. Lectures, *Tuesday and Thursday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is intended for those who elect their required year of science work in this department and for candidates for the degree of S. B. in chemistry.

2. — General Biology. Lectures, *Monday and Friday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This course and its continuation, No. 3, are required of all students electing Biology as their major, and also of candidates for the degree of S. B. in the General Science, Biological, or Medical Preparatory course.

3. — General Biology. Lectures, *Monday and Friday at* 4; laboratory work (4 hours), *Monday, Wednesday, and Friday from* 2 *to* 4.

PROFESSOR KINGSLEY.

4. — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

The students in the Medical Preparatory course take this subject at the Medical School.

Subjects 1 to 4 will not be accepted as work for advanced degrees.

5. — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*

PROFESSOR KINGSLEY.

6. — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

7. — The History of Zoölogy. One lecture a week for the first half-year. PROFESSOR KINGSLEY.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom, and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

8. — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

9. — General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Hours to be arranged.* PROFESSOR KINGSLEY.

Subjects 5 to 9 are intended for both graduates and undergraduates.

There is required from all students taking Laboratory Courses, a laboratory fee of $2.00 per term, payable to the Bursar of the College in advance.

## GEOLOGY.

PROFESSOR MARSHALL.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. Students must have passed in Physics 1 and Chemistry 1 before taking Geology. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals systematically arranged in wall-cases is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which

the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ*.

SUBJECTS.

1. — Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

2. — Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

1. — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year*). PROFESSOR DOLBEAR.

## DRAWING.

PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recita-

tions, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, together with the elements of kinematics, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used. A progressive course in design is pursued preparatory to and in connection with thesis work.

SUBJECTS.

1. — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week* (*second half-year*).
PROFESSOR ANTHONY, MR. DANIELS.

2. — Technical Sketching and Lettering. *Two hours a week* (*first half-year*). PROFESSOR ANTHONY, MR. DANIELS.

3. — Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* MR. DANIELS.

4. — Elements of Mechanism. *Two hours a week* (*first half-year*).
MR. SANBORN.

5. — Machine Drawing. *Two hours a week* (*first half-year*).
MR. SANBORN.

6. — Kinematics. *Two hours a week* (*second half-year*).
PROFESSOR ANTHONY.

7. — Advanced Machine Drawing. *Two hours a week* (*first half-year*). PROFESSOR ANTHONY.

8. — Elements of Design. *One hour a week* (*second half-year*).
PROFESSOR ANTHONY.

9. — Topographical Drawing, with field work, chain, compass, level, and transit. *Three hours a week for the year.* MR. DANIELS.

10. — Machine Design. *Two hours a week for the year.*
PROFESSOR ANTHONY.

## CIVIL AND MECHANICAL ENGINEERING.

PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

SUBJECTS.

1. — Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week (first half-year).* MR. DANIELS.

2. — Topography. Lectures, recitations, drawing, and field practice. *Two hours a week (first half-year).* MR. DANIELS.

This subject must be preceded by 1.

3. — Elementary Mechanics. *Three hours a week (second half-year).* MR. SANBORN.

4. — City and Mining Surveying. Recitations, field and office work. *Three hours a week (second half-year).* MR. DANIELS.

5. — Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week (first half-year).* MR. DANIELS.

Subjects 4 and 5 must be preceded by 1 and 2.

6. — Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week (first half-year).* MR. SANBORN.

7. — Thermo-dynamics. *Three hours a week (second half-year).* MR. SANBORN.

8. — Applied Mechanics. *Three hours a week (second and first half-years).* PROFESSOR BRAY.

Subjects 6, 7, and 8 must be preceded by Calculus.

9. — Applied Mechanics (laboratory). *One hour a week (first half-year).* PROFESSOR BRAY.

10. — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Three hours a week for the year.* PROFESSOR BRAY.

11. — Mechanical Laboratory. *Four hours a week (second half-year.* PROFESSOR BRAY.

This must be preceded by Mechanical Drawing and Engineering 6, 7, and 8.

12. — Roads and Railroads, to be taken with 5. *Three hours a week (first half-year); two hours a week (second half-year).* PROFESSOR BRAY.

13. — Hydraulics. *Three hours a week (first half-year).* PROFESSOR BRAY.

14. — Bridges and Roofs. *Two hours a week (second half-year).* MR. DANIELS.

15. — Masonry Construction. *Three hours a week (second half-year).* PROFESSOR BRAY.

Subjects 13, 14, and 15 must be preceded by 9.

16. — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## ELECTRICAL ENGINEERING.

PROFESSOR HOOPER.

To students in the College of Liberal Arts who may desire to elect advanced work in Electricity, the following subjects are open: Subjects 1, 2, and 3 require a good working knowledge of Algebra and Trigonometry, while 4 and 5 require some acquaintance with Calculus and Differential Equations.

SUBJECTS.

1. — Dynamo Electric Machinery. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

2. — Electrical Calculations. *Two hours a week (second half-year).* PROFESSOR HOOPER.

3. — Electrical Laboratory (advanced course). *Three hours a week for the year.* PROFESSOR HOOPER.

4. — Electricity (advanced work). Alternating currents. *Four hours a week (first half-year); three hours a week (second half-year).* PROFESSOR HOOPER.

5. — Theories of Electricity and of Magnetism. *Three hours a week for a half-year.* PROFESSOR HOOPER.

## MUSIC.

PROFESSOR LEWIS.

The department offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The courses in Harmony and in General History of Music may well be taken by students who wish to cultivate their appreciation of music, but have no intention of preparing themselves for professional work in the art.

SUBJECTS.

1. — Harmony. Lectures and practical work, based on Jadassohn's Manual of Harmony. Collateral reading concerning the lives of Bach, Händel, Haydn, Mozart, and Beethoven. *Tuesday at* 3, *Thursday from* 2 *to* 4. PROFESSOR LEWIS.

An elementary knowledge of piano playing is required of those who take this subject.

2. — Counterpoint, Simple and Double. Lectures and practical work, based on the manuals of Jadassohn, Bridge, and others. Collateral reading concerning the lives of Schubert, Schumann, Mendelssohn, and Wagner. *Three hours a week, as arranged by the instructor.* PROFESSOR LEWIS.

A thorough theoretical knowledge of harmony, and much facility in the harmonization of basses and choral melodies, are required of those who take this course. A full equivalent of Music 1 must have

been done by students who wish to begin their college work with Music 2.

[3. — Fugue, Canon, Musical Form, and the Elements of Orchestration. Lectures and practical work, with various manuals for class use and reference. *Three hours a week for the year.*]

[Will be given in 1897-98.]

Students who elect this subject must have attained grade A or B in Music 2, and must have given evidence of talent in melodic invention. Those who are admitted to the course are required to attend regularly during the year the public rehearsals or concerts of the Boston Symphony Orchestra, and at least eight concerts of chamber-music, as prescribed by the instructor.

4. — General History of Music from the earliest times to the present day, with especial attention to the period since the death of Palestrina. Lectures, with various treatises for reference. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*).

PROFESSOR LEWIS.

[5. — Special studies in Musical History, in Musical Criticism, or in the development of Musical Form.]

[Will be given in 1897-98.]

An equivalent of the work of Music 4 and an ability to read with facility German and French are required of students who elect this subject. The same requirement of concert attendance as for Music 3 is made for Music 5. The course may be given in lectures, or may consist of individual work of students under the direction of the instructor.

6. — The Phenomena of Sound in their relation to music and musical instruments. Lectures and experiments. *One hour a week for the second half-year.* PROFESSOR DOLBEAR.

The first half-year's work in Physics 1 must have been done by those who elect this subject.

## PHYSICAL TRAINING.

MR. STROUD AND MISS MOAKLER.

Regular exercise in the gymnasium is required three hours a week of all students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The aim of the department is to secure better carriage and more symmetrical development of the

body, and to develop a fuller appreciation of the value of systematic exercise. The work prescribed for each student depends on the physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. Attention is also given to running, jumping, vaulting, and other healthful athletic sports. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Courses in Science.

The courses outlined below, in General Science, Biology, Chemistry, and Medical Preparatory studies, lead to the degree of Bachelor of Science, are entered through Entrance Examination Group V, and are intended for graduates of general high schools, who wish to prepare themselves for specialized scientific work. Like the engineering courses, they are placed upon a technical basis, and far less latitude is allowed the student in the choice of subjects than in the courses in Arts and Philosophy, the election being made when the course is chosen. The programs of these courses are given below. Fuller statements of the different subjects will be found under the corresponding numbers in the statements of the Departments of Instruction, pages 53 to 88.

## COURSE IN GENERAL SCIENCE.

### Freshman Year.

*English* (as in Engineering Courses).
*German* 1 or 2.
*French* 2 or 1.
*Physics* 1.
*Biology* 2.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*English* (as in Engineering Courses).
*German* 2, or *German* 3 (first half-year), and *Biological German* (second half-year).
*French* 2 (if German 3 is taken).
*Biology* 3.
*Physics* 2 (first half-year) and 4 (second half-year).
*Mathematics* 1 (taken this year by those entering with French).
*Physical Training.*

### Junior Year.

*German* 3 (first half-year and *Biological German* second half-year).
*Chemistry* 1.
*Mathematics* 1 (for those entering with German).
*Descriptive Geometry* (second half-year).
*Physiology* (first half-year).
*Embryology* (second half-year).
*Shop Work* (first half-year).
*Mechanics* (second half-year).
*Elective, seven hours.*

### Senior Year.

*Chemistry* 2.
*Chemistry* 10.
*Philosophy* 2 and 3.
*Geology* 1 and 2.
*Systematic Biology* (second half-year).
*Surveying* (first half-year).
*Elective, three hours.*

## SPECIAL COURSE IN BIOLOGY.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

*English* (as in Engineering Courses).
*German* 2, or *German* 3 (first half-year) and *Biological German* (second half-year).
*French* 2, or *elective six hours*, for those entering with French.
*Biology* 3.
*Chemistry* 1.
*Physical Training.*

### Junior Year.

*German* 3 (first half-year) and *Biological German* (second half-year).
*Physiology* (first half-year).
*Histology* (first half-year).
*Embryology* (second half-year).
*Chemistry* 2.
*Chemistry* 10.
*Elective, eight hours* (*fourteen* for those entering with German).

### Senior Year.

*Geology* 1 and 2.
*General Morphology.*
*Human Anatomy* at Tufts Medical School.
*Special research* in Biology, including *thesis*, twelve hours.
*Elective, five hours.*

## SPECIAL COURSE IN CHEMISTRY.

### Freshman Year.

*Chemistry* 1.
*Mathematics* 1.
*German* 1 or 2.
*English* (as in Engineering Courses).
*Physics* 1.
*Drawing.*
*Physical Training.*
*Elective, three hours* (first half-year).

### Sophomore Year.

*Chemistry* 2 and 3.
*Chemistry* 4.
*Chemistry* 10.
*Physics* 4.
*English* (as in Engineering Courses).
*Chemistry* 11.
*German* 2, or *French* 1.
*Physical Training.*

### Junior Year.

*Chemistry* 12.
*Chemistry* 13.
*Chemistry* 5.
*Biology* 1.
*Physiology* (first half-year).
*Chemistry* 8.
*Chemistry* 6.
*Chemistry* 14 and 15.
*Elective, three hours* (second half-year).

### Senior Year.

*Applied Chemistry* (first half-year).
*Gas Analysis* (first half-year).
*Fire Assay* (second half-year).
*Political Science* 1.

*Chemistry* 13 (continued).
*Research* and *thesis*, four hours (first half-year); ten hours (second half-year).

## MEDICAL PREPARATORY COURSE.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

As in the Special Course in Biology.

### Junior Year.

*Chemistry* 2.
*Chemistry* 10.
*Embryology* (second half-year).
*General Morphology*.
*Philosophy* 2 and 3.
*Shop Work* (second half-year).
*German* 3 (first half-year); *Biological German* (second half-year).
*Elective*, *six hours* (*twelve hours* for those entering with German).

### Senior Year.

*Political Science* 1.
*Ethics*.
*Chemistry* 3.
*Human Anatomy*, *Histology*, and *Physiology* at Tufts Medical School.
*Elective*, *six hours*.

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years, and leading to the degree of Bachelor of Science.

The course in Electrical Engineering leads to the degree of Bachelor of Science in Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The same degree in Civil or Mechanical Engineering is given on similar conditions to students who have pursued the course in Civil or Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

Modern Languages. — An elementary knowledge of French or German (see pages 40 and 42) is required of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject is to be met by extra work.

The courses in French and German are, in general, similar to those described on pages 58 to 62 (general statement).

Students in the three branches of Engineering follow the same plan of work for the first two years.

## FRESHMAN YEAR.

### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plain Trigonometry. *Six hours a week.* MR. JORDAN.

**Mechanical Drawing** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** —Lettering and Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Carpentry; Turning; Pattern-Making. *Two hours a week.* MR. C. H. CHASE.

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Spherical Trigonometry. *Two hours a week.* MR. JORDAN.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Three hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.* MR. C. H. CHASE.

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Three hours a week.* MR. WREN.

* See remarks on Modern Languages, page 93.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**Elements of Mechanism.** — *Two hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. WREN.

**Drawing.** — Kinematics. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *One hour a week.* MR. C. H. CHASE.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. H. G. CHASE.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.** — General and laboratory. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical

* See remarks on Modern Languages, page 93.

work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and several motors, including a pair of railway motors; and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions which are fully described in the Graduate Department statement in succeeding pages.

The plan of work for the Junior and Senior years is as follows: —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.*
PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week.*
MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. *Three hours a week.*
MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.*
ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.*
PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.*
PROFESSOR HOOPER.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.*
MR. C. H. CHASE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

* See remarks on Modern Languages, page 93.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. *Three hours a week.*
PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific

principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college, beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and Lectures. *Three hours a week.* MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Center of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PEOFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

* See remarks on Modern Languages, page 93.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. C. H. CHASE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; studies of different types. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. PROFESSOR BRAY.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of

Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field-work, and drafting-room practice in plotting from field notes, calculating, laying out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the class-room of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requiring, on the part of the students, the application of formulæ to cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department. The plan of the last two years of the course is as follows : —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Two hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. H. G. CHASE.

**Electrical Laboratory.**— Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.* MR. DANIELS.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over

*See remarks on Modern Languages, page 93.

Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of Conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.* MR. DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Hydraulic Laboratory.** — Measuring Discharges through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Railroads.** — Economic Theory of Railroad Location. *Two hours a week.* PROFESSOR BRAY.

**Bridges and Roofs.** — Theory and Practice of Designing. *Two hours a week.* MR. DANIELS.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per Week. | Must be preceded by |
|---|---|---|---|
| | **First Term.** | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Freehand Drawing | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | Rhetoric | 3 | — |
| | **Second Term.** | | |
| 7 | Mathematics | 2 | 1 |
| 8 | Mechanical Drawing | 3 | 2 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | Rhetoric | 2 | 6 |
| 13 | Mechanics | 3 | 7* |

* May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | **First Term.** | | |
| 14 | Analytical Geometry | 3 | 7 |
| 15 | Elements of Mechanism | 2 | 8, 9 |
| 16 | Machine Drawing | 2 | 8, 3 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 13 |
| 20 | Chemistry, General and Laboratory | 3 | — |
| 21 | Surveying | 2 | 7 |
| | **Second Term.** | | |
| 22 | Calculus | 3 | 14 |
| 23 | Drawing | 2 | 15, 16 |
| 24 | Forging | 2 | — |
| 25 | French or German | 3 | 18 |
| 26 | Rhetoric | 3 | 12 |
| 27 | Physics, Lectures | 3 | 19 |
| 28 | Physics, Laboratory | 3 | 19 |
| 29 | Chemistry, General and Laboratory | 3 | 20 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 30 | Calculus | 3 | E. M. C. | 22 | — |
| 31 | Drawing, Machine. | 2 | E. M. | 23 | — |
| 32 | Topography | 2 | C. | 21 | — |
| 33 | French or German | 3 | E. M. C. | 25 | — |
| 34 | Electricity, Recitations | 3 | E. M. C. | 14, 27, 28 | — |
| 35 | Electricity, Laboratory | 2 | E. M. C. | 14, 27, 28 | — |
| 36 | Steam Enginery | 3 | E. M. C. | 27 | — |
| 37 | Qualitative Analysis | 3 | E. M. C. | 29 | — |
| 38 | English Literature | 1 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | 2 | E. M. C. | 30 | — |
| 40 | Vise, and Machine Work | 2 | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 30 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | 2 | E. M. | 34, 35 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 27 | — |
| 45 | Physical Laboratory | 2 | E. M. C. | 34, 35 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 30, 36 | 39 |
| 47 | English Literature | 1 | E. M. C. | 38 | — |
| 48 | Masonry Construction | 3 | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 32 | — |
| | Drawing — Design | 1 | E. M. | 31 | — |

* E.— Electrical. M.— Mechanical. C.— Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing — Design | 2 | E. M. C. | 31, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | 3 | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | 3 | M. | 31, 36, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 59 | English Composition | 1 | E. M. C. | 26 | — |
| 60 | Surveying | 2 | C. | 32 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 30 | — |
| 62 | Drawing — Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | 4 | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | 4 | M. | — | 68 |
| 66 | Laboratory, Hydraulic | — | E. M. C. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 27 | — |
| 68 | Steam Engineering | 3 | M. | 55 | — |
| 69 | Railroads | 2 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 2 | C. | 52 | — |
| 71 | Thesis | — | E. M. C. | — | — |

* E.— Electrical. M.— Mechanical. C.— Civil.

# Buildings and Equipment.

## BUILDINGS.

The college buildings are fourteen in number: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, Dean Hall; the Commons Building, containing the commons dining-hall, the post-office, and rooms for students; and Metcalf Hall, for women students. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains thirty-five thousand bound volumes, and about sixteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. It has a very full collection of English works relating to music, and in addition to its general collection in American history, the valuable collection in this field of the late Richard Frothingham. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all mem-

bers of the College every day in the week, except Sunday, from 8.45 A. M. to 12.45 P. M., and from 2 to 5 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering eight hundred and twenty-six volumes and eighteen hundred and seventy-five pamphlets.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late Phineas T. Barnum, who also gave the College a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has just been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During recent years a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, have been placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the southern and western states. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the

species in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratories are in the newly-erected wing. The laboratory for elementary work is equipped with all necessary facilities, while the laboratories (two in number) for advanced and research work have all the necessary appliances and reagents for investigation in the lines of Anatomy, Histology, and Embryology.

The department library of Natural History, recently established in the Barnum Museum, contains those publications which bear directly upon the work of the department. It already embraces over eight hundred volumes and nearly nineteen hundred pamphlets. Its future increase is in part provided for by the publications received in exchange for the "TUFTS COLLEGE STUDIES." Most of the series of periodicals are complete since 1870.

## GODDARD GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, including fourteen Sargent developing machines, a large wrestling mat, and facilities for basket ball. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime, and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electrometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a meter in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a 12 kilo-watt polyphase generator, a 15 kilo-watt 110 volt generator, and a pair of 110 volt 1,500 watt machines for the Library three-wire installation. Connected with the engine by a clutch is a 15 kilo-watt Mordey alternator. There are also a pair of railway motors and several small motors for testing purposes and for power. Steam power is furnished by a Whittier boiler.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These

cells are in constant use for experimental and motor work, and for lighting.

### CHEMICAL BUILDING.

The building of the department of Chemistry contains laboratories for General Inorganic, Organic, Analytical, and Metallurgical Chemistry, a large lecture room, library, and weighing room, and the private laboratories of the Professor in charge. The rooms are provided with all the modern laboratory conveniences and are well equipped with apparatus and chemicals.

### BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The equipment includes a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting rooms are in the third story and separated from the noise and vibration of the shops. Abundant and uniform light is provided by means of large skylights on the northerly side.

### THE HALLS.

The Halls for the accommodation of students in the College of Letters are five in number. East, West, and Dean Halls, and the Commons Building, for men, are arranged with spacious and convenient rooms, in suites, are warmed by steam, lighted by gas, and have good modern plumbing. Metcalf Hall for women students is a gift to the College by Mr. Albert Metcalf, of Newton. It is built of buff brick and gray limestone, of simple and dignified architecture, and is equipped with every convenience. In the basement is a gymnasium, with bath-rooms connected. The first floor contains the rooms of the matron, a reception-room, cloak-room, reading-room,

and dining-room. The second and third floors have pleasant rooms for students, with ample bath and toilet conveniences on each floor. In the wing is the kitchen on the first floor, and servants' rooms on the second. Every safeguard for health and against fire is provided.

# General Information.

## RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere.

The RUSSELL LECTURE, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students, on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator. The lecture will be delivered in 1897 by the Rev. W. S. Perkins, D. D., of Meriden, Connecticut.

## TUFTS COLLEGE STUDIES.

This publication has been established as a means of presenting to the world the results of original work done in the different departments of the College. The numbers, which will be issued as material is ready, will be distributed to educational institutions and learned societies. The College desires to establish regular exchanges of these Studies with all publishing institutions at home and abroad. Correspondence regarding such exchanges should be addressed to the Librarian of Tufts College.

Three numbers have been issued, containing the following papers: "The Anterior Cranial Nerves of Pipa," by G. A. Arnold; "Ectodermic Origin of the Cartilages of the Head,"

by Julia B. Platt; "The Classification of the Arthropoda," by J. S. Kingsley; "Development of the Lungs of Spiders," by O. L. Simmons; "Development of the Wing in Sterna Wilsoni," by V. L. Leighton; "The Morphology and Classification of the Pauropoda, with Notes on the Morphology of the Diplopoda," by Frederick C. Kenyon.

The editorial board of Tufts College Studies, for the year 1896, is made up of the President of the College, and Professors Knight, Dolbear, and Kingsley.

## ADMISSION AND REGISTRATION.

The first examinations for admission to the College of Letters are held on the three days immediately following the annual Commencement in June, and the second examinations on three successive days in September, the last being the opening day of the college year. The program of the examinations may be found in the College Calendar, on pages 4 and 5. Students entering on examination are required to register at the office of the Registrar before taking their examinations. Those entering on certificate are required to register before noon of the opening day of the college year. They should file the papers of certification, on the proper blanks (to be obtained of the Registrar of the College) at least one month before the opening of the college year. This is necessary for a thorough examination by the Faculty of the statements submitted, and any one who does not comply with the full requirements relating to certificates may be required to take the examinations as a condition of admission to the College.

Every student who has been a resident one year or more at the College is required to file a plan of study, properly approved, at the office of the Registrar before noon of the opening day of the college year, two copies being made on blanks furnished for the purpose, one to be kept on file by the Registrar, the other for the use of his major instructor. A registration fee of two dollars will be charged to every student not registering in person on the morning of the opening day. Hours for consultation of students with instructors will be

publicly announced. No petitions concerning the courses of students in regular standing, except such as may be made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty at the first meeting of the term. The Committee on Freshman Plans of Study will be in session for consultation from two to five o'clock in the afternoon of the second day of the fall examinations. All classes will meet their instructors on Friday, the second day of the college year, according to a schedule which will be duly posted.

The morning of Saturday, the last day of the first half-year, will be given to registration of plans of study for the second half-year and consultation in regard to the work of the term.

PROMOTIONS.— Students in the courses leading to the degrees of A. B. or Ph. B. are registered as Sophomores when they have twenty-six term hours to their credit; as Juniors when credited with fifty-eight term hours; and as Seniors when credited with ninety term hours.

Students in the Engineering Courses fail of promotion if they have deficiencies amounting to six term hours in the prescribed work of the year. The Engineering Committee will be in session from nine to twelve o'clock in the forenoon of the second day of the fall examinations to consider the programs of such students in Engineering as have six or more term hours of conditions, or have failed to fulfil requirements imposed at the close of the previous year.

ADMISSION FROM OTHER COLLEGES.— Students entering Tufts College after pursuing study in any other college of equal rank are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

The Registrar's office hours during the summer vacation will be from two to five o'clock on Tuesday, Wednesday, Thursday, and Saturday afternoons.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. Every special student shall choose a major department, and shall make up a plan of study under the direction and subject to the approval of the major instructor.
2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.
3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.
4. A special student, on leaving college, shall be entitled to a certificate giving the per cent attained in each course pursued, and signed by the President and Registrar.
5. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

## TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of three days at Thanksgiving, two weeks at Christmas, and one week beginning on the Saturday before the first Thursday in April.

## EXPENSES.

The charge for instruction is *one hundred dollars* a year. Engineering students are charged *twenty dollars* a year extra.

Students in the chemical laboratories are charged for breakage, and *four dollars* a term for materials used. A fee of

*two dollars* a term, payable in advance, is required of all students taking laboratory work in Biology. Students other than engineering who take shop work are charged extra.

The college halls will accommodate two hundred and fifty men. Half-room rent, including heat, ranges from sixteen to eighty-five dollars. Metcalf Hall will accommodate twenty-four women. Students furnish their own rooms. A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the college buildings, except Paige Hall. Any damage done by students to college property is charged in the term bills.

Rooms in the college halls will be open for the occupancy of students on and after the Wednesday of the week preceding the opening of the college year.

Students not having a college residence will be charged *ten dollars* a year for rooms occupied between recitation hours.

Every student who enters the College of Letters is required to deposit with the Bursar of the College either a bond with two satisfactory sureties for the sum of *two hundred dollars*, or the sum of *one hundred dollars* in cash, which sum, with interest at the rate of four per cent yearly, will be returned when the student leaves the College, his term bills first being paid in full. No officer or student of the College will be accepted as a bondsman.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement, or graduation will not be permitted.

All college charges are payable to the Bursar, and all arrangements with regard to rooms are to be made with him. The Bursar's office is in the Library Building, his office hours during the college year being on Tuesday from 8.45 to 11.45 in the morning, and on Friday from 8.45 to 12 in the morning, and from 2 to 4 in the afternoon.

Students board in commons at $3.75 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student.

The following estimates represent the fixed annual expenses:—

| | | |
|---|---|---|
| Tuition | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds | 10.00 | 10.00 |
| Reading room | 1.00 | 1.00 |
| Half-room rent | 16.00 | 85.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks), | 126.00 | 180.00 |
| Total | $263.00 | $386.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships must be filed with the Bursar, on blanks furnished for the purpose, on or before the tenth day of October; and, if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

*Scholarships are available for those students only whose term bills are fully paid within ten days after the opening of each college term or after such bills shall have become due. The bills of any student whose connection with the College ceases are due at that time. The term bills of members of the graduating class are payable on the Saturday preceding Commencement Day.*

No scholarship is available to any student who is not a resident of a college dormitory, unless excused in writing from such residence by the authority of the executive committee of the Board of Trustees.

The following scholarships, the yearly income of which is one hundred dollars each, are awarded annually by the Trustees, but except in special cases, when the donor has otherwise stipulated, the Trustees will award scholarships in the sum of fifty dollars each.

THREE STATE SCHOLARSHIPS,— Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS,— Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS,— Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS,— Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP,— Founded by the late A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP,— Founded by the late Charles Robinson, LL. D., of Newton.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP,— Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP,— Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP,— Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP,— Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP,— Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP,— Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP,— Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP,— Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP,— Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP,— Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP,— Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP,— Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP,— Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP,— Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP,— Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP,— Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP,— Founded by Henry Rollins, of Bangor, Me. The income of this scholarship is not at present available.

THE J. H. MORLEY MEMORIAL SCHOLARSHIP,— Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP,— Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP,— Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP,— Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP,— Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE JOSEPH D. PEIRCE MEMORIAL SCHOLARSHIP,— Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857,— Founded by Heman Allen Dearborn, for the benefit of women students. This scholarship is not available the present year.

TWO JOHN AND LUCY H. STOWE SCHOLARSHIPS,— Two scholarships of one hundred dollars each for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

TWO SIMMONS SCHOLARSHIPS,— Founded by the will of Robert F. Simmons, of Attleboro, in the names of Mary F. and Robert F. Simmons.

THE JOSHUA S. AND HARRIET N. WHITE SCHOLARSHIP,—Founded by the late Joshua S. White, of Pawtucket, R. I.

THE JOHN B. PERKINS SCHOLARSHIP,— Founded by Ann Maria Perkins, of Medford, Mass.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP,— Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP,— Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP,— Founded by the late Moses Day, of Roxbury.

THE JOHN AND LUCY H. STOWE SCHOLARSHIP,— Founded by Mrs. Lucy H. Stowe, of Lawrence, for the benefit of women students.

The following scholarships are awarded under special conditions: —

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY,— Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

THE WENDELL PHILLIPS MEMORIAL SCHOLARSHIP,— Founded to perpetuate the name, fame, and influence of Wendell Phillips. This scholarship is to be awarded to a student who has completed the Freshman and Sophomore years of his course, and he is to have the benefit of it during the remainder of his course. The beneficiary must be of sound body, high character, and ability in declamation and debate, and must comply with certain special conditions, including participation in a competitive debate of the applicants at the end of the Sophomore year. The specific conditions governing the award of this scholarship may be obtained by those intending to apply therefor of the Secretary of the Faculty, to whom application should be made early in the Sophomore year.

LOAN FUND FOR WOMEN.— The Woman's Universalist Missionary Society of Massachusetts maintains a fund which is loaned to deserving women students, in sums of one hundred dollars, at four per cent. This fund now amounts to about two thousand dollars.

APPOINTMENTS.— The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES.— In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 2, of the fifth, sixth, and seventh sections of Chapter LV in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES.— Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES.— Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate

for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent) in a major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In the two years immediately preceding graduation,—

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for honors,— Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on page 49 to 51.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 49 to 51, for the attainment of that degree.

THE DEGREE OF BACHELOR OF SCIENCE will be conferred upon students who shall have completed the General Course in Science, the Special Course in Biology or in Chemistry, or the Medical Preparatory Course, complying in a satisfactory manner with the conditions stated on pages 51 and 89.

THE DEGREE OF BACHELOR OF SCIENCE in Civil Engineering, in Electrical Engineering, or in Mechanical Engineering, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Science in Civil Engineering, Electrical Engineering, or in Mechanical Engineering, after a graduate course of one year in the Engineering Department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 128.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

## DEGREES.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are: —

| | |
|---|---|
| ENGLISH LITERATURE. | HISTORY. |
| MODERN LANGUAGES. | MATHEMATICS. |
| LATIN. | CHEMISTRY. |
| GREEK. | BIOLOGY. |
| ELECTRICITY. | |

The degree of Doctor of Philosophy is offered in CHEMISTRY and BIOLOGY.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions: —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of pro-

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

## DEGREES.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are: —

| | |
|---|---|
| ENGLISH LITERATURE. | HISTORY. |
| MODERN LANGUAGES. | MATHEMATICS. |
| LATIN. | CHEMISTRY. |
| GREEK. | BIOLOGY. |
| ELECTRICITY. | |

The degree of Doctor of Philosophy is offered in CHEMISTRY and BIOLOGY.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions: —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of pro-

for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent) in a major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In the two years immediately preceding graduation,—

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for honors,— Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on page 49 to 51.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 49 to 51, for the attainment of that degree.

THE DEGREE OF BACHELOR OF SCIENCE will be conferred upon students who shall have completed the General Course in Science, the Special Course in Biology or in Chemistry, or the Medical Preparatory Course, complying in a satisfactory manner with the conditions stated on pages 51 and 89.

THE DEGREE OF BACHELOR OF SCIENCE in Civil Engineering, in Electrical Engineering, or in Mechanical Engineering, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Science in Civil Engineering, Electrical Engineering, or in Mechanical Engineering, after a graduate course of one year in the Engineering Department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 128.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
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|---|---|
| ENGLISH LITERATURE. | HISTORY. |
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The degree of Doctor of Philosophy is offered in CHEMISTRY and BIOLOGY.

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THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions: —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of pro-

fessional study will be assumed, upon which a thesis shall be presented.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF MASTER OF ARTS may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS.*

**English Literature.**— Candidates for the degree of Master of Arts must have taken subjects 1 and 2, with at least six term hours of work in one or more of the subjects numbered from 3 to 7. Six term hours must also have been given to one or more of the subjects numbered from 8 to 15. If not previously taken, the subjects numbered 13 and 14 may be pursued as a part of the graduate work, but the student will be ex-

* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 53 to 87.

pected to surpass, both in quantity and quality, the work required of undergraduates. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results of some extended investigation in literary history or criticism.

**Modern Languages.**— The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts, who specializes in this department, to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 58 to 62.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

**Latin.**— Candidates for the degree of Master of Arts in Latin must have completed with credit all the subjects named on pages 62 and 63 except 4 and 6. In subject 4 graduate students will be required to do more work than undergraduates. Subject 6 is intended for those who have taken all the others. The required thesis must embody the result of the special investigation of some author or period, or of some philological or archæological subject.

**Greek.**— Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3, or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates,

or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.** — Every graduate student who intends to become a candidate for a degree must have taken History 1 and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on pages 68 to 71, 2, 3, 5, 6, and 7 will be accepted as part of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.** — Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. Graduate students in Mathematics 2, 3, 4, 5, 6, and 7 will be required to do more advanced work in these subjects, to receive the degree of Master of Arts in Mathematics, than is required of undergraduate students.

**Chemistry.** — Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 10, or their equivalents. Subjects 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, and 15 are offered for graduate students, and satisfactory work must be done in at least five of these subjects. The candidate must present an acceptable thesis and pass satisfactory examinations in all of the subjects studied.

**Biology.** — Candidates for the degree of Master of Arts in

Biology must have already done work equivalent to Biology 2, 3, and 4; or, lacking that, they must take omitted subjects in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.**— The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Chemistry.**— Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1 to 7 inclusive, 9 and 10, or equivalent work. Unless previously qualified, they must take subjects 11, 12, 13, 14, 15, and 17, and devote at least one year to subject 16. Examinations in the above subjects must be satisfactorily passed, and a thesis embodying an original investigation in Chemistry must be presented.

A well-equipped laboratory is open to graduate students who may wish to pursue special lines of research, and the department is prepared to offer every facility for the encouragement of original investigations.

**Biology.**— Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station. They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying

original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY.— In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single reelection, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 120 applies to all students of the College, graduate as well as undergraduate.

# THE DIVINITY SCHOOL

# Faculty of the Divinity School.

ELMER H. CAPEN, D.D., PRESIDENT.
*In charge of Political Economy.*

CHARLES H. LEONARD, D.D., DEAN.
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D.D., LL. D.,
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A.M., B.D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D.D., SECRETARY.
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A.M., B.D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A.M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A.M., B.D.
*Woodbridge Professor of Applied Christianity.*

## NON-RESIDENT LECTURERS.

HENRY I. CUSHMAN, D.D.
*Lecturer on Methods of Biblical Study.*

F. W. HAMILTON, A.M.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B. D.
*Lecturer on Character and the Ministry.*

*For students of the Divinity School, see the Register, pages* 29 *and* 30.

*For the Calendar, see pages* 4 *and* 5.

# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium, are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

They are also required to pass a satisfactory examination in Greek, Roman, English, and American History; in Rhetoric; in English Literature and in English Grammar and Composition, in which the requirement is as follows: —

ENGLISH GRAMMAR AND COMPOSITION. — Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1897. — Shakespeare's As You Like It, and Merchant of Venice; Defoe's History of the Plague in London; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

For 1898. — Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Tennyson's The Princess.

For 1899. — Dryden's Palamon and Arcite; Pope's Iliad, Books I., VI., XXII., and XXIV.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

Those whose age or circumstances forbid so extensive preparation are admitted to the privileges of the school, to take such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

Applicants from other theological institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem*.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week (first half-year).* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week (second half-year).* PROFESSOR TOUSEY.

**English.** — One or more courses to be selected, under direction, from those offered in the College of Letters [see page 53–58]. *Three hours a week.*

**New Testament.** — Historical Introduction; Days before Christ. *Two hours a week.* PROFESSOR HARMON.

**Oratory.** — Class Exercises in Vocalization and Gesture. The Principles of Oratory exemplified in practice. *One hour a week.* PROFESSOR MAULSBY.

**A Science or Language Study.** — (To be selected under direction of the Faculty.) *Three hours a week.*

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week (first half-year.)* PROFESSOR TOUSEY.

**New Testament.** — Criticism of the Synoptic Gospels, Textual and Historical; Hermeneutics; Life and Teachings of Jesus from the Greek of the Synoptic Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week (first half-year); three hours a week (second half-year).* PROFESSOR WOODBRIDGE and PROFESSOR KNIGHT.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Three hours a week (second half-year).* PROFESSOR LEONARD.

**English Bible.** — Uses of Scripture in Public Worship; Reading of Selections. *One hour a week.* PROFESSOR KNIGHT.

**Oratory.** — Practice in the reading of Scripture, Hymns, and in formal and extemporaneous preaching. *One hour a week.*
PROFESSOR MAULSBY.

## MIDDLE CLASS.

**New Testament.** — Criticism of Acts and the Epistles; History and Doctrines of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week.* PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week (first half-year); three hours a week (second half-year.)*
PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.*
PROFESSOR LEONARD.

**Applied Christianity.** — Organization and Government of the Various Sects; the Relations of the Church to Individual and Social Life. *Two hours a week.* PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — Criticism, Exegesis, and Doctrines of the Fourth Gospel. *Two hours a week.* PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week (first half-year).*
PROFESSOR KNIGHT.

**Philosophy of Theism.** — The Final Problem; Limits of the Intelligence; Theistic Arguments; Final Cause in Nature; Anti-Theistic Theories. *Three hours a week.* PROFESSOR TOUSEY.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week (first half-year).*
PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*

PROFESSOR LEONARD.

**Applied Christianity.** — The Pastor's Personal Qualifications and Duties; Organized Work in the Parish; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. *Four hours a week (second half-year).*

PROFESSOR WOODBRIDGE *and* PROFESSOR LEONARD.

# Departments of Instruction.

**Psychology.**— The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science,— to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.**— The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**English.**— The efficiency of the clergyman is so largely conditioned by literary ability that much emphasis is placed upon the study of English. Opportunity is given to the student to elect in the College of Letters, in the direction both of composi-

tion and English literature. Well-directed practise in English composition affords direct aid in the formation of literary style, while the influence of the study of the masterpieces of literature, though indirect, is no less powerful in developing a feeling for appropriate expression. Moreover, the great poets and prose-writers abound in suggestion for the public speaker both in their thought and its expression. In consequence, divinity students are expected to take such of the offered subjects as are adapted to their individual needs and available time. Some are advised to continue this work even throughout their whole theological course.

**New Testament.** — In the Sub-Junior Year, the history of the Jewish people from the Conquest of Alexander till the opening of Jesus' ministry, is pursued to acquaint the class with the events involved, with the growth of the institutions, the rise of parties, the origin and character of the literature, and the changes in the social and religious sentiment of the Jewish people during this period, with the aim to secure as clear and complete an understanding as possible of the conditions under which Jesus began his ministry.

In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the Synoptic Gospels being

employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, the course of facts in his life, and the doctrines he taught. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connections.

In the Middle Year the History and Doctrines of the Apostolic Church are studied, the Book of Acts being used as the basis. This writing is first examined as an historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

As a part of this study the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

In the Senior Year the problem of the Fourth Gospel is considered: the question of its use among the early Fathers, its internal character and its relation to the other New Testament writings, and to the thought of the Apostolic Church. The books used in the latter part of this year's work are in the German language.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, dis-

covering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. In general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States, and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou; and of the American Church History series.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.**— The primary aim of this study is a general knowledge and a catholic temper regarding the non-

Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Lao-tse, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.**—Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to

Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.**— After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science; and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.**— The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions,— the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the

Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems,— ecclesiastical, political, social and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in Homiletics covers one half of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on

Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The History of Christianity is traced from its beginnings, with the special aim to discover by what methods the application of Christian principles has been secured and what results have followed; and in general to study the influence of Christianity as a factor of individual development and social progress.

II. The second part of this course is devoted to a study of Christian principles in their present day applications, and of the Christian Church as it exists in modern times, giving attention to the constitution, organization, government of the various sects, and also to methods of work in missions, in reforms, and charities as these are undertaken by Christians of to-day. This study is followed with a discussion of the visible opportunities for work proper to the Church and to Christians, and of the instrumentalities which the most successful working churches employ.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises toward the members of a single congregation, or toward others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church, — baptism, confirmation, the Lord's Supper, marriage, and the burial of the dead. The object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II and III) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring

cities, that they may study the methods of those who are in living contact with want and suffering; engage in actual benevolent work under the direction of skilled workers, and make report of what they see and do, for discussion in the class-room. This special work is meant to meet the demand for a closer contact between the church and the daily lives of the people, and for a more sympathetic interest in their social and industrial problems.

**English Bible.**— The object of this course is to show how the literary value of the Bible may be used to further the cause of religion. We therefore aim to observe the natural fitness of different parts of the Bible to different public services, and to render them appropriately. It is believed that the Scriptures may thus receive a more extended attention and increased honor. Professor Moulton's series called The Modern Reader's Bible will be used as the text. The course is open to all classes in the school.

**Oratory.**— The object of the instruction in the department of Oratory is a natural, impressive, and reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the work of the first year involves consideration of the fundamental pinciples that underlie all oratory, accompanied by practice to assimilate these principles. In the second year the practice becomes specifically adapted to the needs of students of divinity, and includes Scripture and hymn reading, and the preaching of both written and unwritten discourse.

**Physical Training.**— Regular exercise in the Gymnasium is ordinarily required three hours a week of men students from the middle of November to the middle of March during the two years following entrance. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination. Provision is made for continuing physical exercise throughout the whole course, according to individual needs.

# General Information.

### RELIGIOUS EXERCISES.

Devotional exercises, conducted by the professors and the students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

### EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

### LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

### ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

### GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and

vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

## THE DEGREE OF MASTER OF ARTS.

The Degree of Master of Arts is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts, who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

## BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the Dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room

is reserved for any applicant who does not appear within one week of the opening of the College year.

The women students in the Divinity School may find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

Beginning with the college year 1897–98, students in the Divinity School will be charged *one hundred dollars* annually for tuition. This charge will include the privilege of occupying a room in Paige Hall, and provision for heating and caring for it. A remission of one half of this amount may be made by the Executive Committee of the Trustees to students who cannot be accommodated in Paige Hall or who live at home. The necessary expenses for board, washing, gas, and gymnasium charges do not exceed two hundred dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Bursar of the College either a bond, with two satisfactory sureties, for the amount of one hundred dollars, or he may deposit the sum of fifty dollars in money, which sum will bear interest at the rate of four per cent yearly, and will be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS, ETC.

THE GREENWOOD SCHOLARSHIP. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

THE DOCKSTADER SCHOLARSHIPS. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

# THE MEDICAL SCHOOL

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., PRESIDENT.

JOHN L. HILDRETH, A. B., M. D., 14 Garden Street, Cambridge.
DEAN *and Professor of Clinical Medicine.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
SECRETARY *and Professor of General, Descriptive, and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine.*

*Professor of Surgery.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington Street,
*Professor of Medical Chemistry.* Dorchester.

CHARLES A. PITKIN, A. M., PH. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 528 Beacon Street, Boston.
*Clinical Professor of the Diseases of Children.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

HERBERT L. SMITH, A. M., M. D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

WALTER CHANNING, M. D., Brookline.
*Professor of Mental Diseases.*

THOMAS M. DURRELL, M. D., 23 Bow Street, Somerville.
*Professor of Medical Jurisprudence.*

FREDERICK L. JACK, M. D., 215 Beacon Street, Boston.
*Professor of Otology.*

GEORGE H. WASHBURN, A. B., M. D., 311 Marlboro Street, Boston.
*Professor of Obstetrics.*

FREDERIC M. BRIGGS, A. B., M. D., 299 Beacon Street, Boston.
*Assistant Professor of Clinical Surgery.*

CHARLES G. CUMSTON, B. M. S., M. D., 871 Beacon Street, Boston.
*Assistant Professor of Surgical Pathology.*

## OTHER INSTRUCTORS.

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury Street, Boston.
*Lecturer on Hygiene.*

WILLIAM A. WHITE, M. D., 22 Howland St., Roxbury.
*Lecturer on Diseases of Children.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston:
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, M. D., 57 Hancock Street, Boston.
*Lecturer on Laryngology.*

FRED S. RADDIN, M. D., Chelsea.
*Lecturer on Genito-Urinary Surgery.*

GEORGE A. BATES, D. D. S., Auburndale.
*Lecturer on Histology.*

GEORGE A. WEBSTER, M. D., 28 Greenwich Park, Boston.
*Instructor in Otology.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Instructor in Medical Chemistry.*

HOWARD S. DEARING, M. D., 607 Tremont Street, Boston.
*Instructor in Clinical Medicine.*

HERBERT W. WHITE, M. D., 161 Warren Street, Roxbury.
*Instructor in Clinical Medicine.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

E. CHANNING STOWELL, A. B., M. D., Hotel Austerfield, Beacon Street, Boston.
*Instructor in Children's Diseases.*

THEODORE HOUGH, A. B., PH. D., 72 Pinckney Street, Boston.
*Instructor in Physiology.*

EDWARD L. TWOMBLY, A. B., M. D., 406 Massachusetts Avenue, Boston.
*Instructor in Clinical Medicine.*

WARREN F. GAY, M. D., 411 Marlboro Street, Boston.
*Instructor in Surgery.*

JOSEPH C. STEDMAN, M. D., 119 Sedgwick Street, Jamaica Plain.
*Instructor in Rectal Diseases.*

EDGAR GARCEAU, M. D., 22 Highland Street, Roxbury.
*Clinical Instructor in Gynæcology.*

CHARLES D. KNOWLTON, M. D., 18 Hancock Street, Boston.
*Demonstrator of Anatomy.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

JOHN I. FRENCH, M. D., Woburn.
*Assistant in Materia Medica and Therapeutics.*

S. P. COTTRELL, M. D., Hotel Oxford.
*Assistant in Gynæcology.*

PATRICK F. KELLEHER, M. D., City Hospital, Boston.
*Prosector of Anatomy.*

FRED STANLEY GRIFFIN, M. D., Watertown.
*Assistant in the Theory and Practice of Medicine.*

### Laboratory Assistants.

HAIRABED S. JELALIAN, Boston.
*General Chemistry.*

HAGOP DER AVEDISIAN, Avon.
*Medical Chemistry.*

HENRY DALTON, Cambridge.
*Bacteriology.*

## STANDING COMMITTEES OF THE MEDICAL SCHOOL. 1896-97.

EXECUTIVE COMMITTEE. — The President, Dean, Secretary, and Drs Wheatley and Williams.

BUILDING. — The President, the Dean, the Secretary, and Drs. Channing, Cushing, Wheatley, and Williams.

CATALOGUE. — Drs. Thayer, Williams, and Briggs.

NOMINATIONS. — The Dean, Drs. Channing and Wheatley.

LIBRARY. — Drs. Jack, Webber, and Cumston.

COURSE OF INSTRUCTION. — The Dean, Drs. Williams and Cushing.

ADMISSION. — Drs. Dudley, Hall, and Durell.

# The Medical School.

The Tufts College Medical School was established in Boston in 1893. The institution is coeducational, women being admitted upon the same terms as men. The school was first located in a building belonging to the College and situated upon Boylston Street overlooking the Public Garden, but the unexpected increase in the number of students rendered larger accommodations imperative, and the Chauncy Hall School building was rented as a temporary headquarters while the building on the corner of Rutland Street and Shawmut Avenue could be prepared for its permanent location.

This new building, which will be the permanent home of the school, was formerly the property of the First Free Baptist Church, and is a handsome stone structure. The work of reconstruction has already been entered upon, and it is expected that the school will take possession of its new quarters early in the coming year. When completed, the new building will contain nearly fifteen thousand feet of floor space arranged in lecture rooms, laboratories, dissecting rooms, study, and toilet rooms of the most approved description, and every modern improvement possible will be provided for the health and comfort of the students, and for the intelligent study of modern medicine. Separate toilet and study rooms will be provided for the women students. A library and a pathological museum have been inaugurated by the Faculty.

During the past year radical changes have taken place in the administration of the school. Several of the former Board of Instruction have retired and new men have been appointed in their places; a new Dean has been elected; two new chairs have been created, and the list of instructors has been increased so that the efficiency of the teaching force is greatly augmented. This year the school inaugurates its graded four

years' course, and in this connection it is interesting to note that while the number of the entering class is only slightly reduced, notwithstanding the longer time exacted from the student before he or she can receive the degree of Doctor of Medicine, the Senior class has largely increased.

# Departments of Instruction.

## Anatomy.

PROFESSOR THAYER.
DRS. KNOWLTON AND GREENE. } *Five hours a week.*

The course in Anatomy comprises, for the Freshman year, lectures, recitations, and demonstrations, illustrated by plates, models, and dissections. During the second year especial attention is devoted to Applied and Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy, who will assign the parts to students and give all necessary assistance and advice. Abundance of material is furnished students at cost.

## Histology and Embryology.

DR. BATES. *One hour a week.*

The course in Histology is both didactic and practical. The aim of the department is to present the subject comprehensively, beginning with the simple tissues, and by easy gradations presenting the more complicated structures of the body, thus enabling the student to acquire an intimate knowledge of the minute anatomy.

The department is equipped with microscopes and all materials necessary for practical demonstration.

The subject of Embryology is presented from the standpoint

of the physician, the aim being to give the student such a knowledge of the subject as to enable him not only to comprehend those elements which are essential for his obstetrical work, but also to classify the tissues of the body according to our best knowledge of their origin in the embryo.

Students of the Medical School have access for work in Histology and Embryology to the admirable laboratories of the biological department of Tufts College in the Barnum Museum at College Hill.

### Physiology.

DR. HOUGH.

This branch is taught by means of lectures, recitations, and demonstrations. Beginning with a brief consideration of the more important groups of compounds of which the body is composed and to which it gives rise, the student passes to the study of the general chemical characters and reactions of blood and lymph, and of their relation to the tissues; this is followed with the physiology of muscle and nerve, especial emphasis being placed upon the phenomena of irritability, conductivity, relation to environment, etc., which these tissues present and which make them more or less typical of living cells of all kinds. The remaining parts of the subject are then taken up in the following order: The circulation of the blood, digestion and absorption, respiration, excretion, nutrition, the central nervous system, the organs of special sense. By this time the student has acquired an extensive acquaintance with the general functions of the various tissues and organs, and of the organism as a whole; the last month of the course is devoted to the discussion of various detailed applications of the general principles of physiology which are of practical importance in the further study and the practice of medicine.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds, also, is taken up at considerable length, and special reference made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. Much attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of this knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The aim is to impart such information in Chemistry as is necessary to the intelligent physician. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

### Materia Medica and Therapeutics.

PROFESSOR WHEATLEY.
DR. FRENCH. — *Three hours a week.*

Instruction in this department consists of lectures and recitations, three hours a week during the year. Medicines will be exhibited as far as possible. Therapeutics will receive especial attention.

The metric system will be taught, and the ability to write prescriptions in both the old and new systems will be insisted upon.

A reasonable amount of time will be devoted to the late additions to the Pharmacopœia.

### Medical Chemistry.

PROFESSOR AUSTIN.
DR. THORPE. — *Four hours a week.*

Owing to the increased facilities afforded by the management of the school, the scope of instruction in this subject has been largely increased this year, so that now there is offered, in addition to lectures and recitations, practical work in urinalysis, including careful investigation with the microscope, analysis of bile, gastric juice, saliva, blood, and drinking

water. Quantitative analysis, in so far as it pertains to these subjects, is conducted by the students in the laboratory, and the results obtained are carefully filed for future reference. Photo-micrographs have been largely used as a means of familiarizing students with the appearances of microscopic objects. The latter half of the year is devoted to toxicology, and students are required to examine poisons, not only in their pure state but mixed with organic matter; to which has been added this year the examination of various food stuffs which are commonly adulterated. At each examination a written analysis is required of a specimen of milk, urine, and a poison.

### Pathology.

PROFESSOR DUDLEY.
DR. BROWN. } *Two hours a week.*

Instruction in this department will consist of lectures, recitations from text-book, and practical work in the laboratory. Each student, before taking an examination in Pathology, will be required to perform satisfactory laboratory work. To those students who do not possess a microscope, will be loaned one of those belonging to this department at a nominal rental.

It will be the aim to make clear the importance of a thorough knowledge of the causes, course, and results of pathological processes, giving frequent illustrations by morbid specimens.

### Surgical Pathology.

ASSISTANT PROFESSOR CUMSTON. *One hour a week.*

The course in Surgical Pathology for the school year 1896–7 will consist of a series of lectures on special subjects, and the object in view will be to afford instruction in such portions of this branch as are not contained in the ordinary text-books. So far as possible these lectures will be illustrated by pathological specimens and demonstrations.

### Bacteriology.

DR. F. B. BROWN.

This year the course in Bacteriology has been widely ex-

tended. It nows consists of sixty hours' work required from every student, including the lectures, recitations, and laboratory work devoted to the subject. The biology, cultivation, and staining of bacteria, as well as the general bacteriological technique, are especially dwelt upon, thus giving the student a good working knowledge of the subject. The more important pathogenic bacteria, as well as the favorite non-pathogenic varieties, are grown in the laboratory for illustration.

Microscopes are furnished the students at a moderate rental.

### Theory and Practice of Medicine.

PROFESSOR HALL.
DR. GRIFFIN. } *Four hours a week.*

This course consists of two lectures each week by Professor Hall, covering the whole ground of general medicine, comprising in all sixty lectures, and a thorough examination is given by the Quiz-master upon every lecture, two hours per week being devoted to this work. The didactic lectures of this course are fully exemplified by cases presented in the course of clinical medicine. It is considered necessary for the student to be well founded in the theory of medicine before taking up to any great degree the bed-side study of disease.

### Clinical Medicine.

PROFESSOR HILDRETH.
DRS. DEARING, WHITE, AND TWOMBLY. } *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Neurology.

PROFESSOR WEBBER. *One hour a week.*

There will be one lecture each week, during the term,

upon diseases of the nervous system. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centers. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Mental Diseases.

PROFESSOR CHANNING. *One hour a week.*

Instruction in this branch will consist of a course of twelve lectures so arranged as to cover the whole subject of mental diseases. The lectures will be of a practical nature and will be adapted to the requirements of the general practitioner.

### Diseases of Children.

PROFESSOR WILLIAMS.
DRS. WHITE AND STOWELL. *Two hours a week.*

Instruction in this department consists of clinics, lectures, clinical conferences and visits to sick children at their homes. The clinical advantages offered to students in this department are very great, and examples of nearly all the affections of infancy and childhood are shown to the students, including such rare diseases as are seldom seen outside the clinics of a large city. A course of didactic lectures, including the anatomy and hygiene of infancy and childhood, is given by Dr. White, and special instruction in the auscultation and percussion of children and the contagious diseases is given by Dr. Stowell.

### Legal Medicine.

PROFESSOR DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurispru-

dence, together with a thorough course in the making of medico legal autopsies, with as many practical demonstrations as possible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery.

*Three hours a week.*

The instruction given in this department will consist of lectures, recitations, demonstrations, and practical teaching upon the subject of general surgery, and will include instruction in bandaging and dressing. The details of modern antiseptic dressings, the adapting of silicate, dextrine, and plaster bandages, and the application of splints will be taught. At the end of the year a course in operative surgery is given by Assistant Professor Briggs, at which the students are required to perform the various operations upon the cadaver.

### Clinical Surgery.

Professor Smith.
Assistant Professor Briggs. } *Three hours a week.*

The instruction in this department will consist of one lecture a week throughout the school year, in which all the important points will be considered. These lectures will be based upon cases demonstrating the particular subject. The course will be a complete one and will include the various branches necessary to the practitioner. Etherization will be taught, and it is hoped that each student will have the opportunity of administering ether, thereby learning, by practical experience, the technique of anæsthesia. Commencing in January, there will be a series of clinical conferences at which students will present for discussion a full report of cases previously assigned. The student reporting the case will read a paper giving the diagnosis, prognosis, and treatment, and at the conclusion there will be a general discussion of the various points to be considered. Professor Smith will give clinical exercises at the City Hospital during his term of service, and the Surgical Department of the Boston Dispensary will be

open for instruction every morning between 10 and 11 from October 1 to January 1; once a week from January 1 to April 1, and if further instruction is needed, arrangements will be made to continue these exercises during the balance of the term.

### Otology.

PROFESSOR JACK.
DR. WEBSTER. } *Two hours a week.*

Instruction in this department will consist of lectures and clinical teaching. Clinics will be held at the Massachusetts Charitable Eye and Ear Infirmary, where nearly five thousand patients with ear disease are annually treated.

### Genito-Urinary Diseases.

DR. RADDIN.

The various diseases of the Genito-Urinary system will be considered and illustrated by cases as far as practicable.

### Diseases of the Rectum.

DRS OTIS AND STEDMAN.

Instruction in this department will be given by Drs. Otis and Stedman at the Boston Dispensary.

### Ophthalmology.

PROFESSOR TENNEY. *One hour a week.*

This course will be of the most practical character possible, being designed to give the general practitioner such knowledge of the subject as is essential in his practice. The lectures, which are given once a week through the school year, will be fully illustrated by schematic representations, and again by clinical material, which is ample for that purpose.

### Laryngology.

DR. BOARDMAN.

Instruction in Laryngology and Rhinoscopy will be given by Dr. Boardman at the Boston Dispensary, beginning Jan. 1, 1897,

and continuing until April 1. The students of the Senior class will be divided into sections, and will visit the clinic of Dr. Boardman on Tuesdays, Wednesdays, Thursdays, and Fridays of each week, where an opportunity is afforded them for studying the diagnosis and treatment of diseases of the throat and nose by actual examination of the patients. The object of the course is to give instruction in cases of this class which are liable to come under the observation of the general practitioner, such as adenoid growth, diphtheritic false membranes, syphilis, tuberculosis, etc. The subject is also illustrated by lectures and diagrams.

### Obstetrics.

PROFESSOR WASHBURN. *Three hours a week.*

Instruction in this department will consist of lectures, recitations, conferences, and clinical teaching. Lectures will be illustrated by plates and the use of the manikin. Each student will be required to care for at least two cases, clinical instruction being given with one of these, attending them throughout convalescence and handing in a written report of the same. Some of these reports will be read before the class, and subjected to discussion and criticism by class and instructor.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*
(DRS. GARCEAU AND COTTRELL.)

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class, and twice weekly sub-divisions of the class receive practical instruction from Instructor Garceau. Once each week a quiz is held by Assistant Cottrell on the lectures of Dr. Cushing. Arrangements have been made by which students of the Senior class, who wish to continue their studies after graduation, may witness operations in the hospital services of Dr. Cushing.

Dr. Holden has also kindly consented to continue to give clinical instruction to a limited number of students at the Staniford Street Dispensary.

Courses of instruction are open to the students at the clinics of the Free Hospital for Women, on payment of a moderate fee.

## TEXT-BOOKS.

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

**Anatomy**: Gray, Quain, Weisse, Holden, Morris, Cunningham's Dissector.

**Physiology**: Foster, Kirkes' Handbook (13th edition), Landois and Sterling, Martin's Human Body, Flint.

**General Chemistry**: Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Histology**: Schäfer.

**Medical Chemistry**: Tyson on the Urine, Purdy, Roberts on Renal and Urinary Diseases.

**Toxicology**: Reese on Medical Jurisprudence and Toxicology, Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics**: Bartholow (8th edition), Shoemaker (3d edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology**: Greene, Warren, Ziegler.

**Bacteriology**: Woodhead, Sternberg.

**Obstetrics**: Lusk, Reynolds, Dorland, American Text-Book.

**Gynæcology**: Diseases of Women, by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery**: American Text-Book of Surgery, Treves, Ashurst, Wyeth.

**Practice of Medicine**: Osler, Pepper, Wood and Fitz.

**Clinical Medicine**: Osler's Practice of Medicine, Wood and Fitz, Practice, DaCosta's Medical Diagnosis, Tyson's Physical Diagnosis.

**Neurology**: Gower, Dana, Gray.

**Mental Diseases**: Cloustin, Spitzka.

**Pediatrics**: Smith's Diseases of Children, Keating's Cyclopædia of the Diseases of Children.

**Otology**: Politzer and Bennett's System of Diseases of the Ear, Throat, and Nose.

**Ophthalmology**: De Schweinitz, Nettleship, Noyes.

**Medical Dictionary**: Dunglison.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than 200 words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic, including decimal and vulgar fractions and percentage.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned, and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

**Exceptions.**— No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or State normal schools or of institutions of similar grade. To save delay students are requested to bring their diplomas and certificates with them.

Graduates of Pharmacy may be admitted to the Freshman year and excused from General Chemistry.

### To the Second Year Class.

Students of this and other accredited medical schools who have passed a majority of the examinations of the Freshman Year, which include Descriptive Anatomy, Physiology, General Chemistry, Histology, and Hygiene, may be admitted to the Second year class.

Students of dental colleges whose standard of instruction is approved by the Faculty of this School, who have attended two full courses of lectures and passed the examinations of the Freshman year as above noted, may be admitted to the Second year class.

### To the Third Year Class.

Students of this and other accredited medical schools who have passed the examinations of the Freshman year and a majority of those of the second year, which include Applied Anatomy, Medical Chemistry and Toxicology, Materia Medica and Therapeutics, Pathology and Bacteriology, may be admitted to the Third year class.

### To the Senior Class.

Students of this and other accredited medical schools who have passed all the examinations of the Freshman and second year studies and a majority of the third year studies, which include Theory and Practice of Medicine, Surgery, Obstetrics, Gynæcology, Neurology, Pediatrics, and Mental Diseases, and graduates of other regular medical schools, may be admitted to the Senior Class.

Students must matriculate before November 1 of each year, in order to fulfil requirements of time.

## REQUIREMENTS FOR GRADUATION.

Candidates for the degree of Doctor of Medicine must fulfil the following requirements: —

They must furnish certificates that they are twenty-one years of age, and of good moral character.

They must have attended four full courses of medical lectures at some accredited medical college, the last of which shall have been at this school, and no two courses in the same twelve months.

They must have passed all the required examinations.

They must have attended two cases of obstetrics.

They must have dissected one half of the body.

The Faculty reserve the right to change these requirements from time to time without further notice.

The four-years course commenced with the class of 1900. Students from other colleges admitted to the classes of 1898 or 1899 will be subject to the requirements governing those classes.

## CLINICAL ADVANTAGES.

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary are open to students, and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, the Massachusetts Eye and Ear Infirmary, and at the Boston Dispensary, which latter, as the largest medical charity in Boston (42,587 cases were treated last year), affords an unsurpassed field for familiarizing the student with the various forms of disease. Members of the medical and surgical staff are also connected with various other institutions, among which may be mentioned: the Chelsea Hospital, the Somerville Hospital, the Cambridge Hospital, the Woman's Charity Club Hospital, the Free Hospital for Women, and the Marcella St. Home, and so far as possible the material thus afforded will be utilized for the benefit of the students.

## EXAMINATIONS.

There are two examinations held each year, in the college building. They are in writing, and are held at the opening of the regular course of lectures in the fall, and at the close of the course in the spring.

The fall examinations are for

(*a*) Students commencing the study of medicine.

(*b*) Students applying for advanced standing.

(*c*) Students who failed in the spring.

The spring examinations are for promotion and graduation.

All students who intend taking any of the examinations

must register their names with the Secretary on or before a date to be announced upon the bulletin.

Students who have failed twice in their examination upon a subject will not be admitted to a third examination without the payment of an extra examination fee of ten dollars.

*Freshman Year:* Descriptive Anatomy, Histology, including Embryology, Physiology, General Chemistry, and Hygiene.

*Second Year:* Applied Anatomy, Materia Medica and Therapeutics, Pathology, Medical Chemistry and Toxicology, and Bacteriology.

*Third Year:* Theory and Practice of Medicine, Surgery, Obstetrics, Pediatrics, Neurology, Gynæcology, Mental Diseases.

*Senior Year:* Clinical Medicine, Clinical Surgery, Clinical Obstetrics, Clinical Gynæcology, and two of the following elective subjects: Electro-Therapeutics, Diseases of Rectum, Genito-Urinary Surgery, Clinical Pediatrics, Legal Medicine, Ophthalmology, Otology, and Laryngology.

The examination in Bacteriology takes place immediately at the close of the course in that study.

The examination in Obstetrics is optional to students of the Middle year.

Students are eligible for their examinations as follows: those of the Freshman year at the end of first year of attendance; those of the Second year at the close of the second year's course, provided they have passed a majority of the Freshman examinations; those of the Third year at the close of the third year's course, provided they have passed all of the Freshman and a majority of the Second year examinations. Those of the Senior year at the close of the fourth year's course, provided they have passed all of the Freshman and Second year examinations, and a majority of those of the third year.

## DIVISION OF STUDIES.

For the Freshman Year.— Descriptive Anatomy, Physiology, General Chemistry, Histology and Embryology, and Hygiene.

For the Second Year.— Applied Anatomy, Medical Chem-

istry and Toxicology, Materia Medica and Therapeutics, Pathology and Bacteriology.

FOR THE THIRD YEAR.— Theory and Practice of Medicine, Surgery, Obstetrics and Clinical Obstetrics, Neurology, Pediatrics, Gynæcology, and Mental Diseases.

FOR THE SENIOR YEAR.—Clinical Medicine, Clinical Surgery, Clinical Gynæcology, Genito-Urinary Diseases, Rectal Diseases, Mental Diseases, Ophthalmology, Otology, Laryngology, Clinical Pediatrics, Electro-Therapeutics, and Legal Medicine.

## EXPENSES.

### Freshman Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 10.00 |
| General lecture ticket | 100.00 |

### Second Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 10.00 |
| General lecture ticket | 100 00 |

### Third Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 100.00 |

### Senior Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 50.00 |
| Graduation fee | 30.00 |
| Ticket admitting to the four years' lectures (when paid in advance) | 300.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

The matriculation fee, demonstrator fee, laboratory fees, and one half of the general lecture ticket must be paid strictly in advance at the beginning of the year, and in every case by November 1; the second fifty dollars on the lecture ticket is due, and must be paid on or before February 1.

No student will be allowed to attend any course of lectures without the certificate of the Bursar of the College.

The graduation fee is payable on or before the first day of May, and no student will receive a diploma from the College until the Bursar certifies that all fees or charges of any kind are settled.

The Bursar of the College will be at the Medical School for the purpose of collecting fees, a notice of the days and hours being previously posted on the bulletin board.

For the purpose of encouraging thoroughness of medical education, students now connected with the school voluntarily electing to pursue the four-years course, will be received for the fourth year at a nominal rate.

# General Information.

## LIBRARIES.

The students will have free access to the library of the new school, to the library of Tufts College, and, under certain restrictions, to the Boston Public Library, which contains a collection of over 15,000 books upon medical subjects.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the last Wednesday in September of each year, and continues until the last Wednesday in May.

There are no exercises at the school during the week of the Christmas vacation, nor upon Thanksgiving Day, or Patriots' Day.

The next annual course of lectures (1897–98) will commence on the last Wednesday in September, 1897, and continue until the last Wednesday in May, 1898.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of the session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school.

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light,

can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, CHARLES P. THAYER, M. D., 74 *Boylston Street, Boston, Mass.*

# THE BROMFIELD-PEARSON SCHOOL

# Bromfield-Pearson School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

GARDNER C. ANTHONY, A. M., DEAN,
*and Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.,
*Instructor in Drawing.*

CHARLES G. JORDAN, A. B.,
*Instructor in Mathematics.*

SAMUEL C. EARLE, A. M.,
*Instructor in French.*

CHARLES H. CHASE, S. B.,
*Superintendent of Shops.*

_____ _____,
*Teacher of Forging.*

## STUDENTS.

| | |
|---|---|
| Child, Henry C. | *Medford.* |
| Foss, James B. | *St. Albans, Vt.* |
| Marsh, Frederick C. | *Greenville, N. H.* |
| McClintock, Edward H. | *North Cambridge.* |
| Towle, Frank B. | *Norridgewock, Me.* |
| Yeaton, Herbert P. | *West Somerville.* |

# The Bromfield-Pearson School

Is a department of Tufts College, designed to provide a special course of technical instruction to such as may be qualified by previous education and maturity of mind to fit for either of the Engineering Courses of the College in one year, or to pursue with equal advantage the special two-years course of the school.

The first year may be taken as preparatory, either to the Engineering Departments of the College, or to the technical course of the school.

The course for the second year is arranged to meet the wants of those who are unable to pursue their studies for a longer period, but require the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES TO BE DERIVED FROM THE COURSE.

Students may prepare for the Engineering Departments of the College in less time than by the ordinary fitting school, as it is possible to take all the mathematics of a high school course in one year, beside the necessary preparation in language.

Students who pursue the preparatory course, and complete the work satisfactorily, will be admitted to College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are, in most respects, identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two-years course, and later decide to enter the College, will receive full credit, by the Col-

lege, for all work satisfactorily performed which may be equivalent to that required in the Engineering department.

The association with College work and College men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and Lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in Carpentry, Moulding, Pattern work, Forging, and Machine work.

## THE BUILDING.

The Bromfield-Pearson Building is a three-story building 100x50 ft., comprising drafting and recitation-rooms, offices, and shops, for conducting the special courses of the school, and the department of drawing and shop work in the College. The drafting-rooms are three in number, and separated from the noise and vibration of the shops. Abundant and uniform light is provided, rooms on the upper floor having large skylights on the northerly side. There is a forge, moulding, pattern, and machine shop. These are equipped with modern tools and in the most approved manner. Each student is provided with a separate bench, tools, forge, lathe, etc. A twenty-five horse-power Buckeye engine furnishes the motive power for the shop, and also serves for experimental work in the study of the steam engine. One room is set apart as a study for such of the students as do not room at the College, and others who desire to prepare their lessons at the building.

# Course of Study.

## FIRST YEAR.

### Preparatory Course.

ALGEBRA is begun, and during the first three quarters will include quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

GEOMETRY is begun during the first term, and continued throughout the year. The course includes plane geometry and all of solid save spherical.

PLANE TRIGONOMETRY is taken during the fourth quarter.

ELEMENTARY MECHANICS is pursued by the special engineering students during the second term.

ENGLISH GRAMMAR AND COMPOSITION is pursued throughout the year.

FRENCH for the entire year is required of those who are preparing for a College course. Special students may elect.

DRAWING (Freehand) comprises the course required for entrance to the College, together with technical sketching and lettering.

DRAWING (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in freehand are identical with the College course in drawing, and all (or a part) may be omitted by students fitting for College.

DESCRIPTIVE GEOMETRY may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the second term, and is required of those taking the two-years course.

SHOP WORK is elective, and may be taken at any time when it will not interfere with required work.

### Electives.

Those who may be sufficiently prepared in any of the above studies may elect any of the following: —

Preparation in elementary algebra, as above, will admit to course in College algebra.

Preparation in elementary algebra, plane and solid geometry, will admit to Freshman mathematics.

Preparation in elementary mechanics will admit to course in physics, consisting of lectures and laboratory work.

As the instruction in drawing is largely individual, the student may take the grade for which he is prepared.

## SECOND YEAR.

### Special Engineering Course.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to College classes for which they may be fitted.

Advanced Algebra and Spherical Geometry are pursued with the College classes during the first term.

Analytical Geometry is taken during the first term.

Calculus (Differential and Integral) is studied during the second term. This is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

Applied Mechanics is pursued for one term, and the subjects assigned for design are such as to afford a practical application of the theory. This includes the subject of Graphic Statics.

Machine Drawing. Much attention has been given to the method of presenting this work to enable the student to gain, in the shortest time, a comprehensive knowledge of the practical methods for the graphic representation of mechanical ideas. This work is conducted in precisely the same manner as in a well-organized drafting room. It

consists largely of freehand sketches and plainly finished drawings, made according to the most approved systems. Each student is now provided with a time card on which a record is kept of the time employed in the execution of all drawings. It is not only necessary that drawings be well made, and accurate, but that a reasonable time be employed in their execution.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same. It is taught by means of graphic problems and lectures.

MACHINE DESIGN is begun as soon as the student has become proficient in the preceding courses, and has acquired neatness, accuracy, and rapidity of execution. He is now encouraged to think and act for himself, thereby developing his intuitive ability and self-reliance. Many of the methods used in connection with this study are believed to be original with the school, and have resulted in a great saving of the student's time.

STEAM ENGINE. A brief course in the theory of steam is pursued in connection with the problems for design of Boilers and Engines. The subject of VALVE GEARS is considered at this time. The student is also taught to apply the INDICATOR and measure the power and consumption of water. Excellent opportunities are afforded at the College for this work which is of the most practical character.

MOULDING. A short but comprehensive course in the foundry is required of all second-year students. The special object in this training is to acquaint the future designer with the methods employed in the modern foundry, and enable him to judge as to the best methods of constructing patterns. This work is of a very practical nature, consisting of the moulding of a great variety of patterns, the making of cores, and, finally, casting the more important pieces.

SURVEYING. Such practice in the use of transit and level is

afforded the student as shall familiarize him with their use, and enable him to make a simple survey.

### Electives.

The following courses may be pursued in connection with the foregoing, when time and previous preparation will permit: —

PATTERN MAKING. This course includes Carpentry, Turning, Pattern Making, and Moulding. *Six hours a week (first half-year) ; three hours a week (second half-year).*

FORGING. In this short course it is designed to make the student familiar with the metals and the method of working them. The exercises include heating, bending, drawing, upsetting, welding, tempering, case hardening, etc. *Three hours a week (second half-year).*

MACHINE WORK. Vise work in iron, including surface chipping, squaring and fitting, keyseating, scraping and polishing. The machine practice consists not only in the operation of turning, planing, drilling, boring, etc., but in a careful study of the machines, their efficiency, and capabilities. *Six hours a week (second half-year).*

PHYSICS. (See, under Departments of Instruction, the College of Letters, Physics). *Three hours a week for the year.*

PHYSICAL LABORATORY. (See, under Departments of Instruction, Physics). *Six hours a week (second half-year).*

CHEMISTRY. (See, under Departments of Instruction, Chemistry). *Three hours a week for the year.*

SURVEYING. This is the regular work in Surveying for Engineering students in the Sophomore year. *Four hours a week (first half-year).*

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from a school previously attended, or by examination, oral or written, as may be deemed necessary.

In examinations, either for entrance or for advanced standing, the students are considered individually, rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## REGULATIONS OF THE SCHOOL.

Students are subject to the rules governing College students.

Prompt and regular attendance, together with a faithful performance of all duties, is required.

Polite and orderly conduct is insisted upon, and any damage to school property must be made good by the student causing it.

Students who may elect any of the subjects in the regular College courses must attain at least seventy per cent in those studies in order to remain with the class.

No change in program is permitted during the term.

Only such students are encouraged to enter as may be thoroughly in earnest, and desire to make the most of their opportunities. To such, the institution offers exceptional opportunities.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state the subjects which have

been completed according to the requirements of the institution. No diploma is given, or degree conferred.

The tuition fee is one hundred and twenty dollars per year, payable as follows: Sixty dollars on or before the 5th of October, and the balance on or before the 15th of March.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Students board in commons at $3.50 per week; in private families at $3.50 to $5.00 for table board and $1.50 to $2.00 for furnished room. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition | $120.00 | $120.00 |
| Half room-rent | 15.00 | 75.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Physical training | ——— | 10.00 |
| Total | $271.00 | $395.00 |

For other information address, GARDNER C. ANTHONY, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

# DEGREES AND HONORS

1895–96

# Fortieth Annual Commencement.

## JUNE 17, 1896.

## DEGREES CONFERRED.

### Honorary.

DOCTOR OF LAWS.

THOMAS JEFFERSON SAWYER, D. D.*
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